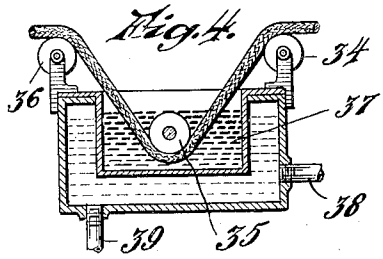
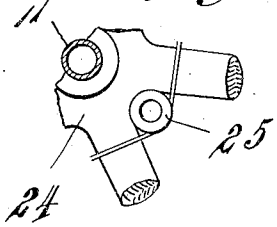
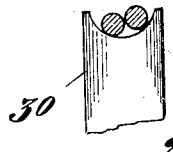
Sept. 3, 1929. S. W. BOURN 1,727,096

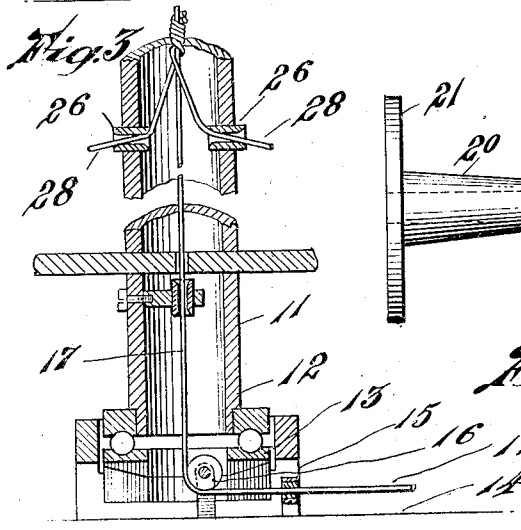
BRAIDING MACHINE

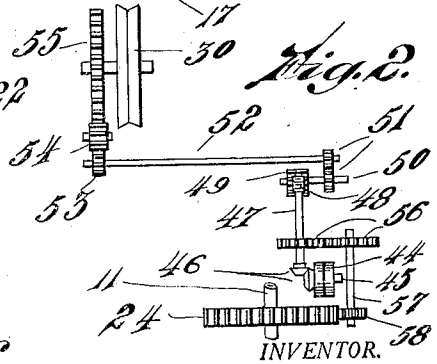
Original Filed Dec. 21, 1927











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UNITED STATES PATENT OFFICE.

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BRAIDING MACHINE.

Application filed December 21, 1927, Serial No. 241,604. Renewed June 14, 1929.

This invention relates to a machine for twisting together a plurality of wires and braiding a covering onto these twisted wires adjacent their point of twisting; and the object of this invention is to provide a vertically disposed rotatable wire-conducting tube having means for supporting a plurality of wire-carrying packages, arrangements being made for feeding the wire and guiding it from the packages through openings in the tube to the interior thereof and for rotating the tube and driving the braiding mechanism to twist the wires together and then braid the covering upon the twisted portion in a continuous operation.

A further object of the invention is the connecting of the driving means of the braiding mechanism and the tube driving mechanism together so that they are run in time with each other to start and stop simultaneously.

A further object of the invention is the provision of simple and effective means for leading a third wire into the tube to be twisted together with the other wires over which twisted wires the covering is braided as fed up through the braiding mechanism.

The invention further consists in the conducting of the covered wire down through a paraffine tank and subsequently winding predetermined lengths of the covered wire onto a reel.

With these and other objects in view, the invention consists of certain novel features of construction, as will be more fully described, and particularly pointed out in the appended claims.

In the accompanying drawings:

Figure 1 is a side elevation of my improved machine.

Figure 2 is a diagrammatic view of the power drive of the machine showing the drives for the wire-twisting mechanism and the braiding mechanism as connected together.

Figure 3 is an enlarged sectional elevation showing the three wires as being led into the tube through the side walls thereof and up through its lower end all to be twisted together by rotating the tube.

Figure 4 is a sectional side elevation showing the heated paraffine tank through which the covered wire is led.

Figure 5 is a small section of the tube drive gear showing a pair of wire guide eyes as supported between the arms of the gear.

Figure 6 shows my improved form of reel the hub portion of which is tapered and one of the heads as being removed to permit mounting of the wire coil on the end of this tapered portion.

Figure 7 is a portion of a sheave showing two turns of the covered wire in the groove thereof.

It is found in a braiding machine of this character in which wires are twisted together and then a covering of braided material is laid onto the twisted wires as fed up through the braiding mechanism all in a single machine, of advantage to provide a frame in which is supported the vertically disposed wire twisting tube, to arrange a cross bar through the tube on which are supported the wire reels; also to provide openings in the side walls of the tube through which the wires are led from the reels into the tube; also to provide means for rotating the tube to twist the wires therein and to support braiding means on the frame above the wire supply and twisting mechanism, whereby the braided covering is laid upon the twisted wires at a point between the end of the tube and the take-off sheave above; also in some instances to provide simple and effective means whereby a third wire may be led into the tube to be twisted together with the other two wires prior to being led to the braiding point; also it is found of advantage to provide a paraffine tank adjacent the braiding machine through which the covered wire is passed and also to mount and drive a reel on which predetermined lengths of the covered wire is wound, means being also provided in some instances for arresting the rotation of the machine when a predetermined length of covered wire has been wound upon the reel; and the following is a detailed description of the present embodiment of my invention and showing one means by which these advantageous results may be accomplished.

With reference to the drawings, 10 designates the frame of the machine which may be made in any suitable form and in this frame is rotatably mounted the vertically-disposed wire twisting and guide tube 11 which is supported at its lower end 12 on the ball bearing step 13 which carries the weight of the tube and the parts mounted thereon. This

step is raised a short distance from the floor or base 14 by the collar 15 and in this collar is mounted the guide roll 16 over which the central or third wire 17 is led up through the center of the tube 11. In this tube, I have mounted a transverse rod 18 which may extend through a hole in the tube to project out from either side thereof a distance sufficient to receive the wire reels 19. These reels are preferably formed with a tapered body or hub portion 20 and a head 21 is fixed at one end of the body and a removable head 22 may be secured at the opposite end of this body portion by a collar 22ª and set screw 23 on the cross rod 18 and by tapering the hub or body portion of the reel coils of wire having different sized center openings may be positioned the wire from which to be led therefrom towards the braiding point above.

Above these reels on the tube 11, I have fixed a large drive gear 24 and between the arms of this driving gear, as illustrated in Figure 5, I have positioned guide eyes 25 and above this gear I have inserted a pair of guide eyes 26 through opposite wall portions of the tube 11, as best shown in Figure 3 through which the wires 28 from the packages 19 are led; first, through the guide eyes 25 in the gear, then through guide eyes 26 into the tube 11 where they are twisted together and are also twisted about the central wire 17.

Above this wire feed, I have mounted the braiding mechanism 29 on the upper portion of the frame 10 and have mounted a take-off sheave 30 above the braiding mechanism over which the covered wire is led, the covering being braided onto the twisted wires 31 at a point intermediate the take-off sheave and the upper end 32 of the tube 11. This wire after having been braided and covered takes a double turn about the sheave, as best illustrated in Figure 7, whereby that portion of the wires which engage this sheave are held against twisting thereby permitting the twist to be placed in the wires at a point intermediate the sheave and the guide eyes 26 where the wires are brought together.

After passing over the sheave 30, this covered wire is led over the pulleys 33, 34, 35 and 36 down into and through the paraffine tank 37 which is heated by steam through steam or hot water circulating pipes 38 and 39. From this tank the covered wire is laid onto the reel 40 as it passes through the guide eye 41 by means of a transverse motion (not shown) on the shaft 42, all of which mechanism is driven in time with the braiding mechanism from the drive pulley 43.

Both the braiding mechanism and the wire twisting mechanism receive their motion from the drive pulleys 44 on the shaft 45, from which shaft motion is transmitted, as shown in Figure 2 through the bevel gears 46 to the shaft 47 thence through the worm 48, worm gear 49 to the shaft 50 thence through small gears 51 to the shaft 52 and through small gears 53 and 54 to the large gear 55 to drive the sheave 30; also, from this shaft 47 the gear 24 is driven. Power is transmitted through the gears 56 and shaft 57 causing the small gear 58 to drive the large gear 24 on the wire conducting and twist tube 11.

My improved braiding machine wherein the wire is fed continuously from wire reels and is twisted together, covered and subjected to a paraffine bath and a predetermined length wound on the take-up reel, is very effective in its operation and all of these operations are performed in a continuous operation with but little attention from an operator.

The foregoing description is directed solely towards the construction illustrated, but I desire it to be understood that I reserve the privilege of resorting to all the mechanical changes to which the device is susceptible, the invention being defined and limited only by the terms of the appended claims.

I claim:

1. In a braiding machine, a frame, a vertically-disposed rotatable wire conducting tube supported in said frame, means carried by said tube for supporting a plurality of wire packages, said tube having openings therein through which the wires from said packages are led to the interior of the tube, a take-off mechanism over which the covered wire is led, means for rotating the tube to twist the wires together thereon, and a braider mechanism supported intermediate the supporting means and the take-off for braiding a covering on the twisted wires.

2. In a braiding machine, a vertically-disposed rotatable wire conducting tube, means carried by said tube for supporting a plurality of wire-carrying packages, said tube having openings therein through which the wires from the packages are led to the interior of the tube, a take-off sheave above the upper end of the tube over which the wires are led, means for rotating the tube to twist the wires thereon, a braider mechanism supported intermediate the wire supports and the take-off sheave for braiding a covering onto the twisted wires between the end of the tube and said sheave, and means connected to the tube drive for driving the braiding mechanism.

3. In a braiding machine, a wire conducting tube, means for supporting wire packages on the tube, openings in the tube through which the wires are led from said packages into the tube, a guide at the lower end of the tube for leading a third wire up into said tube, means for rotating said tube to twist all of said wires together, a take-off sheave, a braiding mechanism intermediate the sup-

porting means and said sheave arranged to braid a covering on said twisted wires.

4. In a braiding machine, a wire-conducting tube, means for supporting wire packages on the tube, openings in the tube through which the wires are led from said packages into the tube, a guide at the lower end of the tube for leading a third wire up into said tube, means for rotating said tube to twist all of said wires together, a take-off sheave, a braiding mechanism intermediate the supporting means and said sheave arranged to braid covering on said twisted wires, and means for driving said braiding mechanism at a speed relative to the twisting speed of the tube.

5. In a braiding machine, a frame, a vertically-disposed wire conducting tube supported in said frame, a transverse bar carried by said tube for supporting a plurality of wire packages, said tube having openings therein above the package support through which wires from the packages are led to the interior thereof, a drive gear fixed to said tube intermediate said package support and said openings, guide eyes in said gear through which the wires are led from the package, means for driving said gear to rotate the tube and twist the wires therein, a take-off sheave over which the twisted wires are led, a braiding mechanism mounted on said frame above the supporting means and arranged to braid a covering on the twisted wires at a point between the upper end of said tube and said take-off sheave, and means connecting the drive of said take off sheave to that of said wire twisting tube.

In testimony whereof I affix my signature.

STEPHEN W. BOURN.