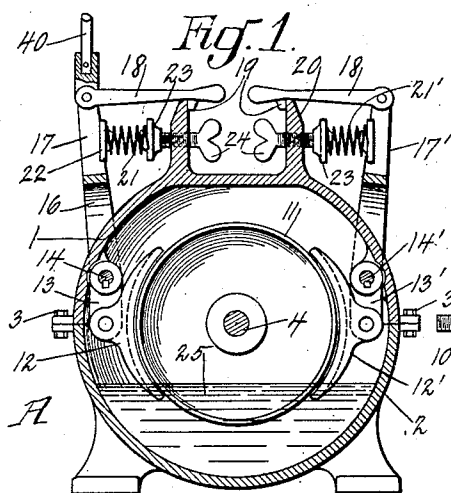
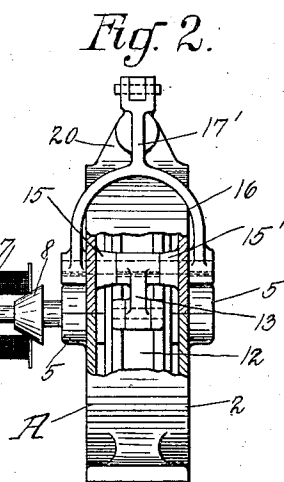
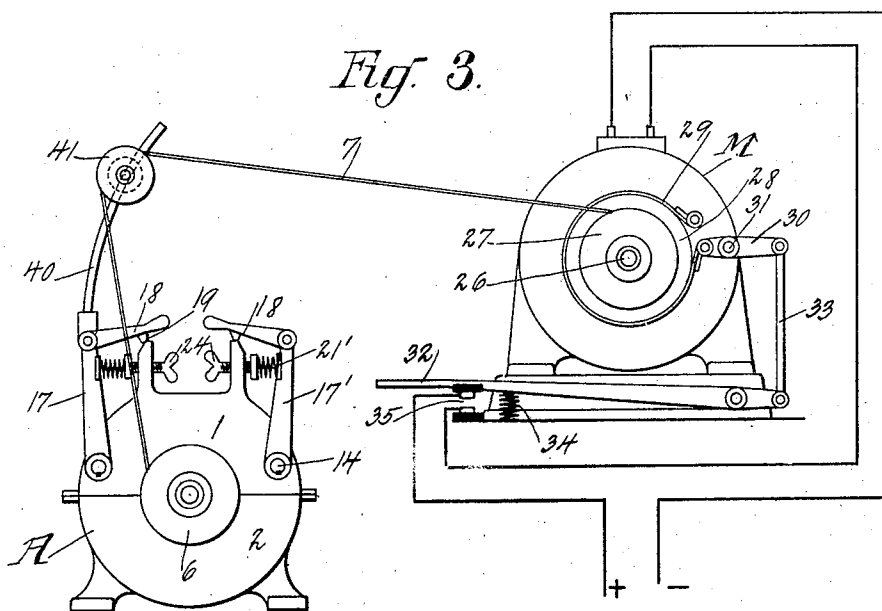


A. SUNDH.
 AUTOMATIC BRAKE MECHANISM FOR SPOOL WINDING MACHINES.
 APPLICATION FILED APR. 8, 1908.

1,077,375.

Patented Nov. 4, 1913.



WITNESSES:

Ernest L. Gale, Jr.
 James C. Bethell

INVENTOR

August Sundh

BY

C. M. Nissen
 ATTORNEY

UNITED STATES PATENT OFFICE.

AUGUST SUNDH, OF YONKERS, NEW YORK, ASSIGNOR TO OTIS ELEVATOR COMPANY,
OF JERSEY CITY, NEW JERSEY, A CORPORATION OF NEW JERSEY.

AUTOMATIC BRAKE MECHANISM FOR SPOOL-WINDING MACHINES.

1,077,375.

Specification of Letters Patent.

Patented Nov. 4, 1913.

Application filed April 8, 1908. Serial No. 425,914.

To all whom it may concern:

Be it known that I, AUGUST SUNDH, a citizen of the United States, residing at Yonkers, in the county of Westchester and State of New York, have invented a new and useful Improvement in Automatic Brake Mechanism for Spool-Winding Machines, of which the following is a specification.

My invention relates to spool winding mechanism adapted for winding wire, thread or other material, and more specifically it relates to an improved form of brake and tension device, one of the objects of the invention being to provide a device of this kind which will automatically maintain a substantially uniform tension on the material being wound.

A further object of the invention is to provide a brake or retarding device for the supply spool or reel, and means operated by the tension of the winding material itself for automatically regulating said device to maintain a substantially uniform tension without the use of complex mechanism.

Other objects of the invention will appear hereinafter, the novel combinations of elements being set forth in the claims.

Referring to the drawings, Figure 1 is a front sectional elevation of the brake-device; Fig. 2 is a side elevation of the same, and showing the supply spool carried thereby; and Fig. 3 is a view of the entire winding mechanism, including a motor and winding spool.

The brake device comprises a hollow drum-shaped body A having upper and lower sections 1 and 2 removably secured together by bolts 3. A shaft 4 extends through the center of the body A and is rotatably mounted in bearings 5 formed on the body A. One end of the shaft 4 is extended beyond the body A to receive a spool or reel 6 from which is supplied the winding material 7. This material may be wire, thread, tape, insulated wire, or other material. The spool 6 is secured in position by means of a cone 8 fixed to the shaft and a cone 9 slidable on the shaft and clamped against the spool by a nut 10. A brake pulley 11 is fixed to the shaft 4 within the body A. The brake shoes 12, 12' are each pivoted to the lower ends of short rock-arms 13, 13' keyed at their upper ends to the rock-shafts 14, 14'. The shafts 14, 14' are jour-

naled in lugs 15, 15' formed on the inner surfaces of the body A. The ends of each shaft 14 and 14' project beyond the body A and on these projecting ends are keyed the yokes 16 of brake arms 17, 17'. Pivoted to the brake arms are inwardly extending arms 18, each provided with a stop or lug 19. These stops 19 are adapted to engage the inner surfaces of lugs 20 formed on the body A, and hold the brake arms in their inner position. Compression springs 21 and 21' are held in position by stops 22 on the brake arms and stops 23 on thumb-screws 24 adjustable in the lugs 20. Within the body A is placed a quantity of oil or other lubricating material 25 in which the brake pulley is partially immersed so that it is kept continually lubricated. This lubricant serves to make the braking action much smoother, and permits an adjustment through a much greater range of pressures than without such lubricant. It also serves to dissipate the heat generated at the braking surfaces.

In Fig. 3 is shown an electric motor M, on the shaft 26 of which is mounted a spool 27 to receive the winding material 7. The spool 27 may be mounted on the motor shaft in the same manner that the spool 6 is secured to the shaft 4. The motor is supplied with a brake comprising a brake pulley 28 and a brake strap 29 secured at one end to the motor frame or other stationary support and having its other end connected to the inner end of a lever 30 pivoted at 31. The brake lever 30 is operated by a lever 32 connected to lever 30 by a link 33. A coil spring 34 normally applies the brake. The circuit of the motor M which is here shown as a direct current motor supplied with current from the + and - mains, is normally open at the switch 35. When the lever 32 is depressed, the brake 29 is released and the motor circuit closed through the switch 35, supplying current to the motor and causing it to operate.

Secured to the upper end of the brake arm 17 is an upwardly extending arm 40, preferably made of elastic or yielding material such as spring steel. This arm carries a direction sheave 41 over which the material 7 passes as it is wound onto the spool 27.

In operation, the parts will assume substantially the positions shown in Fig. 3. As the motor rotates the spool 27 to wind the

material 7 thereon, a certain tension will be maintained on said material, owing to the braking effect of the brake shoes 12, 12'. The spring 21' bearing against the arm 17' may be adjusted to apply a practically constant braking effect through the brake shoe 12'. The pressure of the brake shoe 12, however, will vary with the tension on the wire or cord 7, and will be proportional to the difference between the inward pull of the wire 7 and the outward pressure of the spring 21. If the tension on the wire 7 is increased, this difference is reduced, and therefore the pressure of the brake shoe reduced. It will be observed that as the material 7 is wound onto the spool 27 the diameter of the supply spool is gradually reduced. Now, if a constant pressure of the brake shoes on the brake pulley is maintained, the tension on the cord or wire 7 will increase in proportion to the decrease in diameter of the supply spool, so that the tension will be greatly increased by the time the supply spool is exhausted. But, as just described, the pressure of the brake shoes is not kept constant, as any increased tension on the cord or wire 7 reduces the pressure of the brake shoe 12 which in turn relieves the tension on the cord or wire. By a proper proportionment of parts, any desired degree of sensitiveness may be obtained. That is, the parts may be adjusted so that the tension on the cord or wire 7 is but little greater when the supply spool is nearly empty than when it is full. The sheave 41 may be adjustable on the rod 40, and by moving it downwardly the inward pull on the brake arm 17, due to the tension on the cord or wire 7 will be decreased, owing to the decreased leverage. This will permit a more powerful application of the brake shoe 12, which will in turn increase the tension on the winding material. At the same time, the operation of the tension on the winding material as a regulating device will be less sensitive as the sheave 41 is lowered, owing to the decreased leverage, so that the increase in tension will be more nearly proportional to the decrease in diameter of the supply spool. Either brake arm 17 or 17' may be held in inoperative position by pulling its arm 18 inwardly and placing the catch 19 behind the stop. Regulation of tension may be secured by holding the brake shoe 12' out of contact with the brake pulley 11 and permitting the pressure of the shoe

12 thereon to be automatically varied as required. The thumb-screws 24 provide for the adjustment of the tension on the springs 21 and 21'. By making the arm 40 elastic, the tension on the winding material is kept even, and any slack that may occur when the motor is stopped is taken up.

Although an electric motor is here shown as the means for rotating the spool 6, any other suitable source of power might be employed.

I do not wish to be limited to the precise construction described, as various changes in the details of construction and arrangement of parts might obviously be made within the spirit and scope of my invention.

What I claim as new and desire to secure by Letters Patent of the United States is:—

1. In brake mechanism, the combination with a supply member, of a brake wheel connected thereto, brake shoes, means for applying the brake shoes, means for independently locking either brake shoe in an inoperative position, and means to apply tension to the material from the supply member in opposition to the tension on one of the brake shoes.

2. In winding mechanism, the combination with a rotary supply member, of means to draw winding material from said member, a brake pulley, a brake lever, a brake shoe, a spring to apply the brake shoe, a pulley carried by the brake lever and over which the winding material passes and applies tension to the brake lever in opposition to the brake spring, said pulley being adjustable longitudinally of said lever to vary the said opposing tension.

3. In winding mechanism, the combination of a supply spool, a brake wheel, brake shoes, adjustable means for holding one of the brake shoes on the brake wheel with a yielding pressure, means to lock said brake shoes out of contact with the brake wheel, and means for automatically varying the pressure of the other brake shoe in response to variations in the tension of the supply material.

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

AUGUST SUNDH.

Witnesses:

CHAS. M. NISSEN,
ALFRED C. BECHET.