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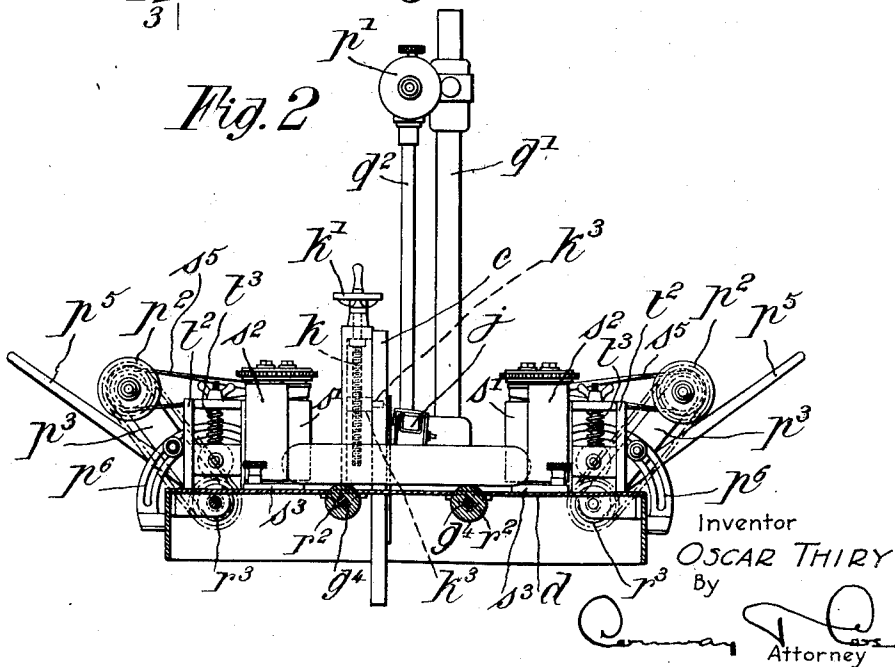
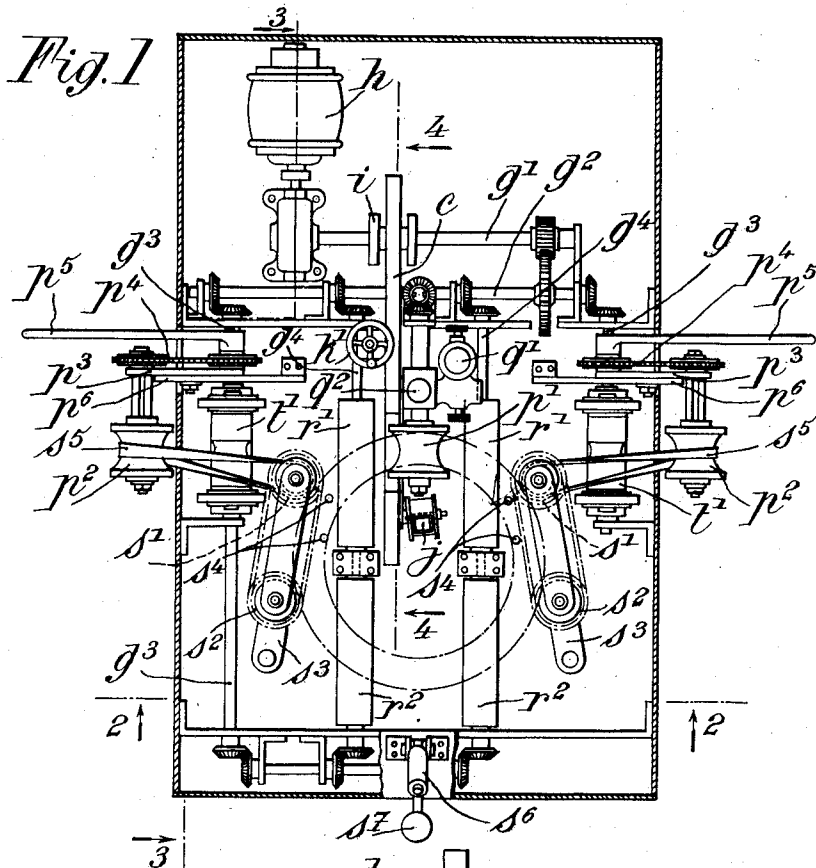
O. THIRY

1,851,877

MACHINE FOR WRAPPING A BAND OF MATERIAL AROUND AN OBJECT

Filed Nov. 21, 1930

3 Sheets-Sheet 1



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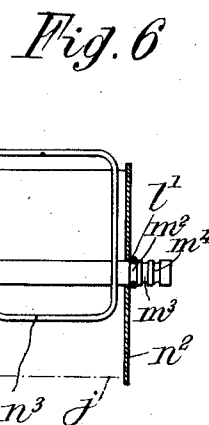
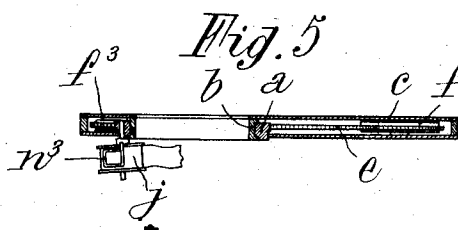
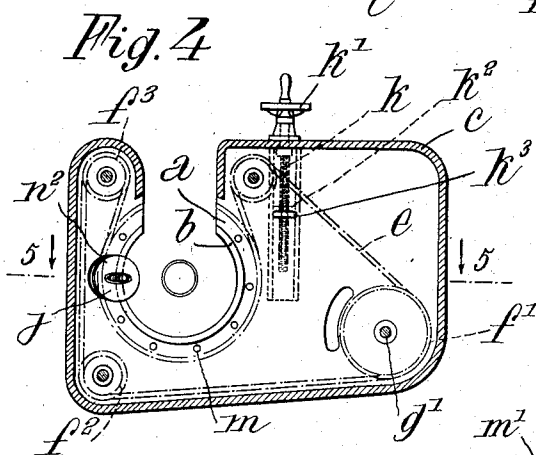
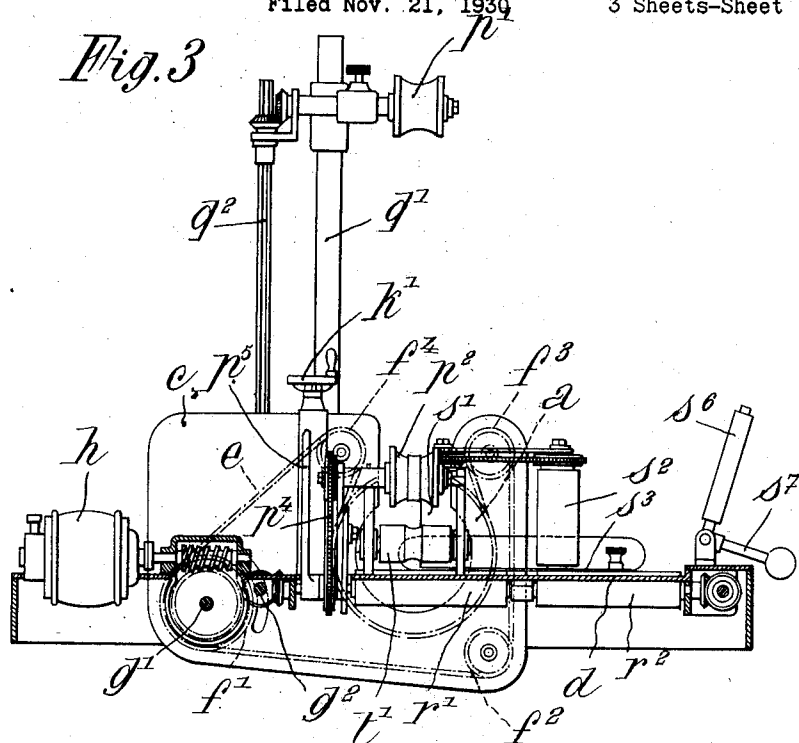
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3 Sheets-Sheet 2



Inventor  
OSCAR THIRY  
By

by  Attorney

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Fig. 7

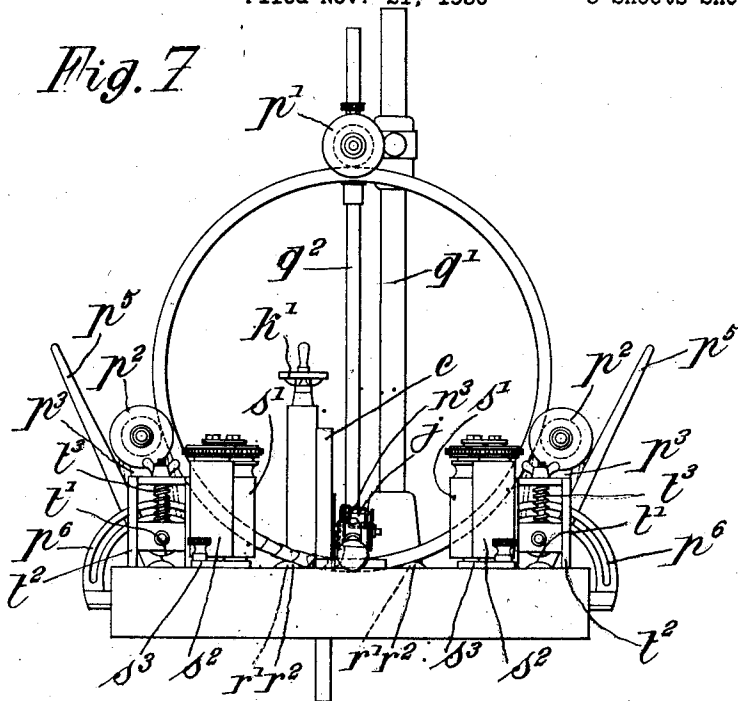
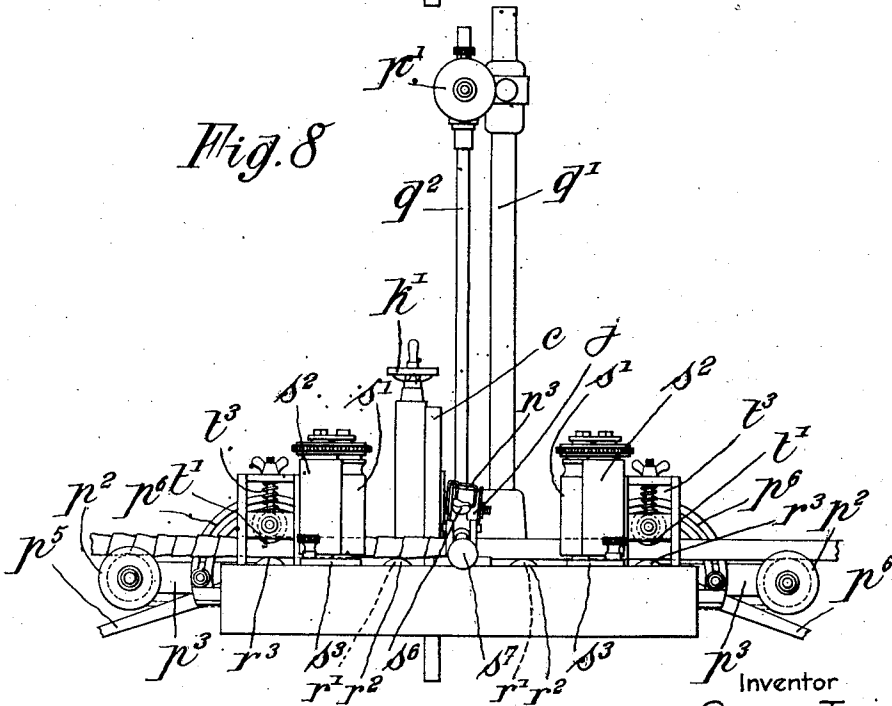


Fig. 8



Inventor  
OSCAR THIRY  
By

Attorney

## UNITED STATES PATENT OFFICE

OSCAR THIRY, OF EPINAY, FRANCE

## MACHINE FOR WRAPPING A BAND OF MATERIAL AROUND AN OBJECT

Application filed November 21, 1930, Serial No. 497,315, and in Belgium December 3, 1929.

The present invention relates to a machine for wrapping a band of material in a helical path around an object.

One of the objects of the invention is to provide a novel form of chain drive for the bobbins generally used in such machines.

Another object is to provide novel means for centering an object inside of an opening about which the bobbin turns.

An additional object is to provide novel adjustable guiding means permitting objects of various forms to be held in position while being wrapped.

Further objects will appear in the course of the detailed description now to be given with reference to the accompanying drawings, in which:

Fig. 1 is a plain view of one constructive embodiment of the invention;

Fig. 2 represents a section taken on line 2—2 of Fig. 1;

Fig. 3 is a section taken on line 3—3 of Fig. 1;

Fig. 4 illustrates a detail of the structure shown in Fig. 1 along a section taken on line 4—4 of the latter;

Fig. 5 is a detail of the bobbin actuating mechanism as seen in a section taken on line 5—5 of Fig. 1;

Fig. 6 is an end view, partially in section, of the bobbin structure;

Fig. 7 shows the machine represented in Figs. 1 and 3 adjusted to receive a circular object such as an automobile tire;

Fig. 8 shows the same machine adjusted to handle straight bars.

Referring to the various figures of the drawings, there is shown an assembly composed of the following elements: a C-shaped bobbin support *a* having teeth formed on the periphery thereof and supported on an annular ring of anti-friction or like metal *b*; a frame supporting bobbin *a* and fitting into an opening in table *d*; means for driving bobbin *a* comprising a chain *e*, a plurality of sprocket wheels *f*<sup>1</sup>, *f*<sup>2</sup>, *f*<sup>3</sup> and *f*<sup>4</sup>, wheel *f*<sup>1</sup> being driven from a shaft *g*<sup>1</sup> actuated by a motor *h* through the intermediary of a clutch of any convenient design *i*; means for displacing bobbin *a* so as to center the latter

with relation to any object to be wrapped, comprising a screw *k*, a hand-wheel *k*<sup>1</sup> keyed to the latter, a nut *k*<sup>2</sup> in meshing relation with screw *k* and slidably mounted in a guide *k*<sup>3</sup> formed in frame *c*, the latter moving about shaft *g*<sup>1</sup>; means for supporting a roll of wrapping material on bobbin *a* consisting of a series of threaded openings *m* adapted to receive a threaded shaft or shafts *m*<sup>1</sup>, a pair of lateral discs *n*<sup>1</sup>, *n*<sup>2</sup>, held in spaced relation by permanently attaching disc *n*<sup>1</sup> to shaft *m*<sup>1</sup> and winding piano cord *l*<sup>1</sup> in any one of grooves *m*<sup>2</sup>, *m*<sup>3</sup> or *m*<sup>4</sup>, formed in shaft *m*<sup>1</sup>, and a spring *n*<sup>3</sup> attached to shaft *m*<sup>1</sup> and adapted to exert pressure on a roll of wrapping material *j*; and means for guiding and displacing the object to be wrapped through the machine comprising a plurality of pulleys *p*<sup>1</sup> and *p*<sup>2</sup>, pulley *p*<sup>1</sup> being mounted to move along a vertical bar *q*<sup>1</sup> and being rotated by a shaft *q*<sup>2</sup> driven from shafts *g*<sup>1</sup> and *g*<sup>2</sup> by means of appropriate gears, while pulleys *p*<sup>2</sup> are pivotally mounted on levers *p*<sup>3</sup> by means of arms *p*<sup>5</sup> coacting with fixed sectors *p*<sup>6</sup>, said pulleys *p*<sup>2</sup> being rotated in the same direction as pulley *p*<sup>1</sup> by chains *p*<sup>4</sup> (Fig. 1) driven from shafts *g*<sup>2</sup> and *g*<sup>3</sup> by appropriate gears; fixed rollers *r*<sup>1</sup> and *r*<sup>2</sup> positioned on opposite sides of the bobbin and rotating in the same direction as the three pulleys *p*<sup>1</sup>, *p*<sup>2</sup>, *p*<sup>2</sup>, said rollers being driven from shafts *g*<sup>4</sup> mounted in driven relation to shaft *g*<sup>2</sup>; supplemental rollers *s*<sup>1</sup>, *s*<sup>2</sup>, supported on a movable pedestal *s*<sup>3</sup> bolted in any one of a number of holes *s*<sup>4</sup> formed in the table, said last named rollers being driven by belts *s*<sup>5</sup> passing over any one of the pulleys such as *p*<sup>2</sup>, the tension on belt *s*<sup>5</sup> being adjustable by either taking in or letting out the latter, or by changing the position of the pulley over which it passes (the pulleys such as *p*<sup>2</sup> may be mounted to slide axially so as to avoid too great an obliquity of the belts);—additional rollers *s*<sup>6</sup> pivotally mounted and counterweighted at *s*<sup>7</sup> and adapted to be moved into position to guide an object being wrapped,—rollers *t*<sup>1</sup> slidably mounted in guides *t*<sup>2</sup> and co-acting with rollers *r*<sup>3</sup> driven from shaft *g*<sup>3</sup> and springs *t*<sup>3</sup> serving to apply the object being wrapped to rollers *r*<sup>3</sup>.

The hereinabove described assembly functions in the following manner: assuming that the object is in the nature of an automobile tire, pulley  $p^1$  is moved along bar  $q^1$ , and pulleys  $p^2$  are adjusted by means of arms  $p^3$ , the latter being fixed in position relatively to sectors  $p^6$  by any convenient locking means (Fig. 7); discs  $n^1$ ,  $n^2$  are then adjusted to receive a proper width of wrapping band by inserting piano wire  $l^1$  in one of the grooves  $m^2$ ,  $m^3$  or  $m^4$ ; if it be desired to simultaneously wrap with cloth and paper band, 2 rolls are mounted in spaced relation in holes  $m$  formed in bobbin  $a$ ; an object being positioned in the machine, handle  $k^1$  is rotated to raise or lower bobbin  $a$  until the latter is spaced at equal distances on all sides from the object, whereby wrapping roll  $j$  will remain at a bobbin  $a$ ; rollers  $s^1$ ,  $s^2$ ,  $s^6$  are then adjusted to lie in contact with the object; as soon as motor  $h$  is started rollers  $r^1$ ,  $r^2$ ,  $s^1$ ,  $s^2$  and pulleys  $p^1$  and  $p^2$  will rotate and displace the object through bobbin  $a$ ; at the same time, chain  $e$ , engaging with the teeth on the periphery of bobbin  $a$ , will rotate the latter and roll or rolls  $j$  mounted thereon; the object to be wrapped will, thereupon, receive a spiral of wrapping material.

If the object to be wrapped is rectilinear, the various rollers and pulleys are moved into the position shown in Figure 8. Rotation of motor  $h$ , will then displace the bar through the bobbin opening while roll  $j$  moves thereabout.

Rollers  $s^6$  serve principally to maintain a flexible material such as wire, or the like, in position while being wrapped.

In prior machines complicated gear systems or belts were used for driving bobbin  $a$ . When gear systems were used, the opening in bobbin  $a$  had to be limited in size. When belts were employed, the bobbin skidded during the period in which the belt straddled the gap in the periphery of the bobbin. By using a chain drive, neither of the foregoing disadvantages are encountered.

The use of centering system  $k$ ,  $k^1$ ,  $k^2$ ,  $k^3$  permits roll  $j$  to move at a substantially constant distance from the object being wrapped and thus does away with inequalities in tension of the band of wrapping material.

As will be seen from Figs. 1, 2 and 8, by properly positioning rollers  $s^1$  and  $s^2$ , and pulleys  $p^1$  and  $p^2$ , a circular object like an automobile tire may be wrapped in a vertical (Fig. 1) or in a horizontal position (Figs. 1 and 2).

What I claim is:—

1. In a wrapping machine, a bobbin, and means for displacing an object to be wrapped through said bobbin, said means comprising three pulleys positioned in a common plane, means for independently changing the positions of two of said pulleys relatively to one

another and to the third pulley, and means for driving one of said pulleys.

2. A structure as defined in claim 1 in combination with a roller mounted with its axis at right angles to the axis of one of said pulleys, and means for driving said roller.

3. A structure as defined in claim 1, in combination with a roller positioned so that its axis forms an angle with an axis of one of said pulleys, and means for driving said roller.

4. A structure as defined in claim 1 in combination with a roller having a fixed axis, a second roller having an adjustable axis, means for mounting the axis of said last named roller in any predetermined position of adjustment, and means for driving said rollers.

5. In a wrapping machine, a support for a roll of wrapping material comprising a shaft having a plurality of grooves formed thereon, a first disc connected to said shaft, a second disc mountable in spaced relation to said first disc, and a wire inserted in one of said grooves and limiting the lateral movement of said second disc on said shaft.

6. In a wrapping machine, a bobbin having an opening in the periphery thereof, means for rotating said bobbin, a frame supporting said bobbin, said frame being pivotally mounted, and means for angularly displacing said frame about its pivotal axis.

In testimony whereof I affix my signature.  
OSCAR THIRY.