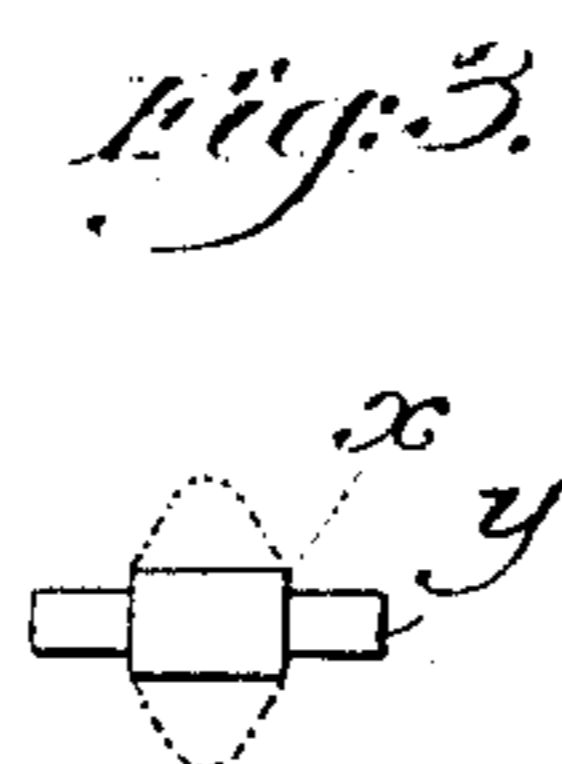
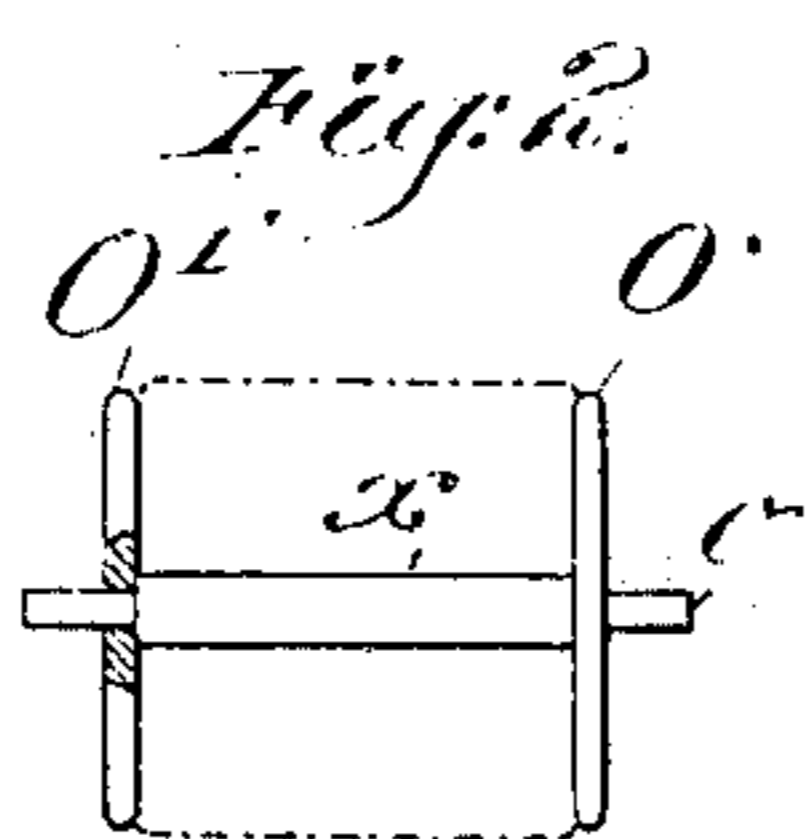
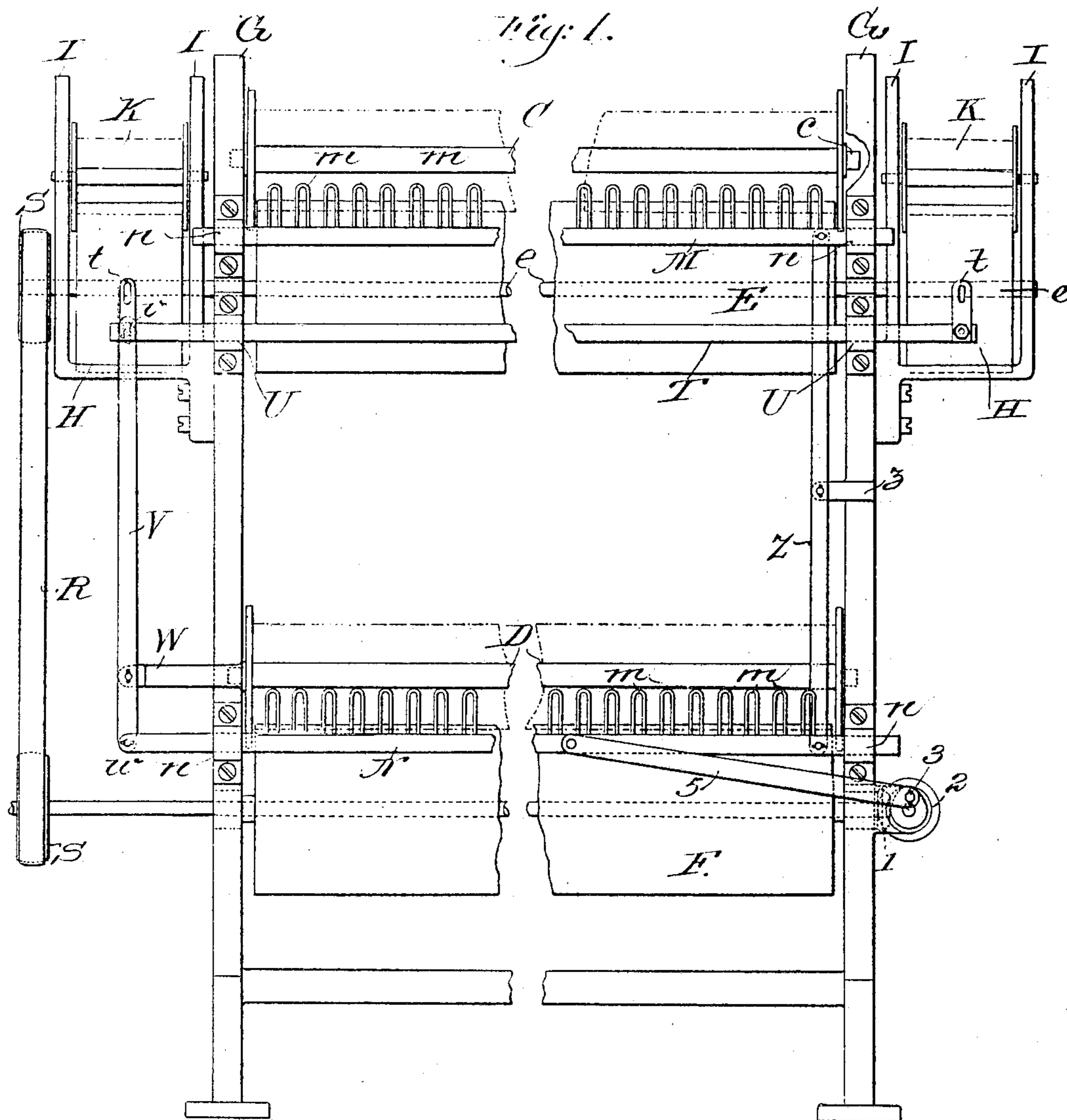


No. 801,548.

PATENTED OCT. 10, 1905.

R. B. ROBINSON.
WASTE END SPOOLER.
APPLICATION FILED MAR. 25, 1904.

2 SHEETS--SHEET 1.



Witnesses:

John A. Gately
John Adams

Fruverstor:

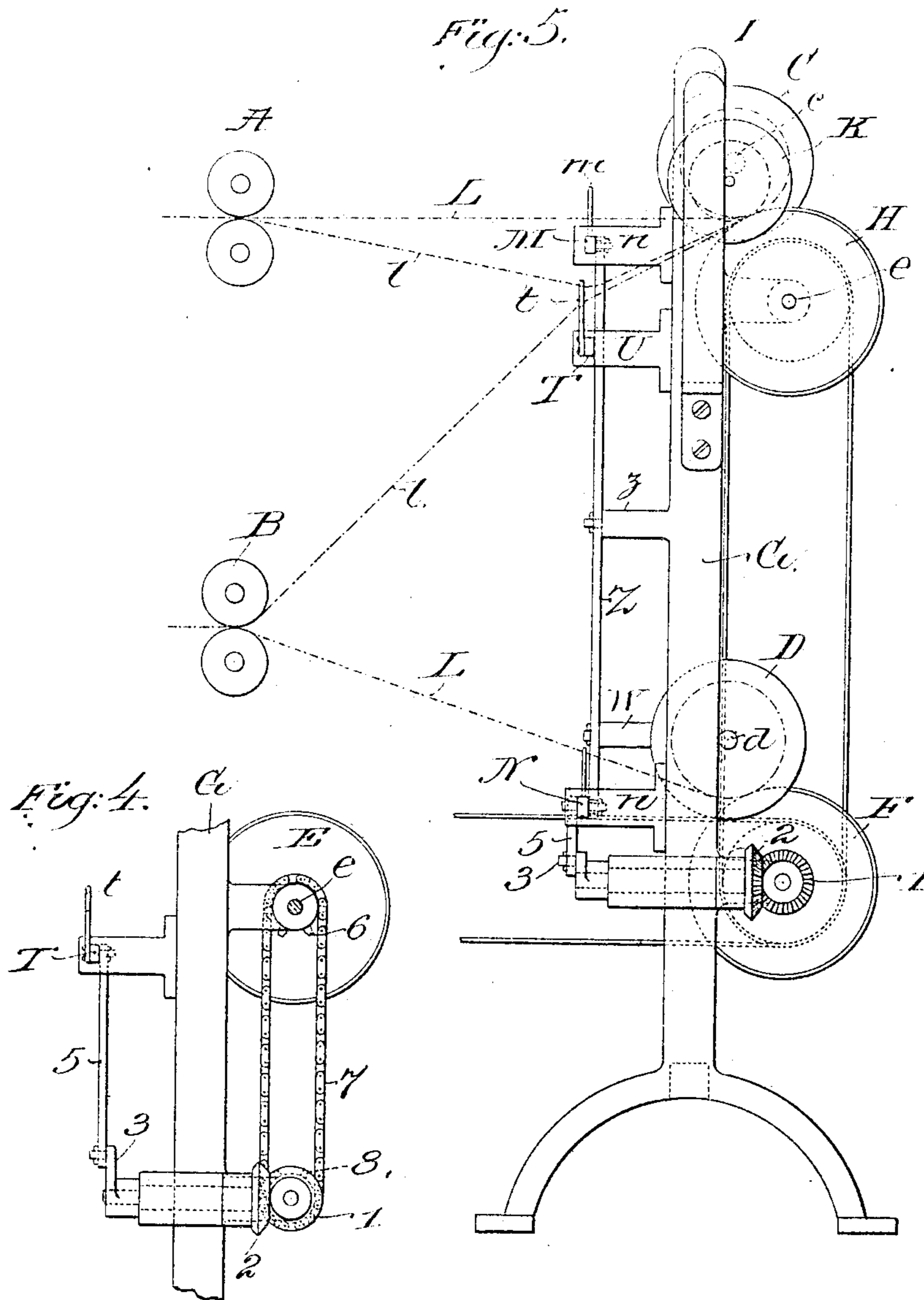
Robert B. Robinson
by his attorney
Gardner W. Pearson

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2 SHEETS SHEET 2.



Witnesses:
John A. Gately
John J. Gately

Inventor:
Robert B. Robinson
by his attorney
Gardner W. Pearson

UNITED STATES PATENT OFFICE.

ROBERT B. ROBINSON, OF LOWELL, MASSACHUSETTS.

WASTE-END SPOOLER.

No. 801,548.

Specification of Letters Patent.

Patented Oct. 10, 1905.

Application filed March 25, 1904. Serial No. 199,968.

To all whom it may concern:

Be it known that I, ROBERT B. ROBINSON, of Lowell, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Waste-End Spoolers, of which the following is a specification.

My invention relates to devices for disposing of the waste side ends produced by certain classes of carding-machines, such as those equipped with the well-known Apperly feed. In machines of this class two of the side strands as they pass through the rub-rolls or condensing-rolls are defective and cannot be drawn and twisted into perfect yarn. It is the common practice for that reason to return these defective strands in some way to one of the breaker-cards, there to be reworked. In some factories the waste ends are allowed to run out and pile up on the floor; but this practice is very objectionable for the reason that such piles of roving are in the way and are very likely to become soiled and to pick up grease and grit.

The general result of returning the waste side ends to the breaker-cards has been obtained in several ways. One method is by the use of endless-belt conveyers, which pick up the waste ends from one of the first workers of the finisher-card and carry the loose web back to the first or second breaker, there to be reworked. This method is not a commercial success, however, and is not successful in practice because the conveyer is in the way and its pulleys are very likely to get clogged by the web. Another method (shown in the patents to Robinson and Conley, Nos. 508,487 and 508,488, November 14, 1893, and Kemp, No. 749,300, January 12, 1904) is by the use of pneumatic tubes or conduits provided with suitable receiving-mouths into which the waste ends pass after leaving the rub-rolls. Through these conduits the waste ends are carried by a current of air created in different ways back to the first or second breaker-card, there to be reworked. This method works well, but is expensive, as it requires an elaborate system of tubes, with a fan and attachments. Another method is by the use of small supplementary spools, one at each end of one of the main or jack spools, upon which the waste ends are wound in the same way that the good ends are wound upon the jack-spools.

Figure 1 shows a view of the jack-spools, pulleys, vibrators, &c., of a finisher-card between the rub-rolls and the jack-spool frame looking toward the jack-spools as it appears

equipped with my waste-end spools. Fig. 2 shows my improved waste-end spool. Fig. 3 shows a spool without washers. Fig. 4 shows an independent vibrator which may be used on some types of machines. Fig. 5 shows a view as from the right of Fig. 1.

In the drawings, A shows the upper, and B shows the lower, rub or condensing rolls.

C is the upper, and D the lower, jack-spool.

E is the upper, and F the lower, jack-spool-driving pulley.

R is a belt which transmits motion from F to E through pulleys S S.

The dotted lines L L show the good ends as they pass from the rub-rolls to the jack-spools, and l l show the waste ends as they pass from the rub-rolls to the waste-end spools of my invention.

Motion is transmitted to driving-pulley F through the shaft by which it is carried by the belt and pulley shown in Fig. 5, and the same speed is given pulley E by belt R and pulleys S and S.

Jack-spools C and D, on which the good ends are wound, consist of a barrel, circular flanges, and spindles *c* and *c*, which project somewhat beyond the flanges. The barrels of these jack-spools are sufficiently long to allow the flanges to lap over the ends of pulleys E and F, and the spindles *c* and *c* project enough to rest against the vertical guides G and G, which form part of the frame of the machine. Jack-spools C and D thus rest in a sort of cradle between pulleys E and F and guides G and G, and the good ends of roving are wound thereon by the coöperative rotation of C and E and D and F. As the roving is wound on them the jack-spools rise, always resting against guides G and G. In order to lay the good ends evenly and compactly upon the jack-spools, vibrators are usually employed, which operate as follows: A bevel-gear 1 is arranged to be carried by any convenient driving-shaft, usually that which carries the lower jack-spool, a second bevel-gear 2 meshes with gear 1, and its shaft carries a crank-arm 3, which is connected with and gives motion to lower jack-spool vibrator-bar N through arm 5. Lower vibrator-bar N is connected with upper vibrator-bar M by an arm Z, which is pivoted at its center to a bracket *z*, attached to the frame of the machine and at opposite ends to vibrator-bars M and N. M and N rest in suitable guides *n*, which permit them to slide back and forth and carry eyes *m m m*, through which

the good ends pass from the rub-rolls to the jack-spools. A back-and-forth motion is thus given to the vibrator-eyes m through bars M and N, lever Z, and arm 5 as crank-arm 3 revolves, and thus the roving is laid evenly upon the jack-spools instead of being allowed to pile up irregularly.

The object of my invention is to provide devices suitable for handling the waste ends at a minimum cost. To this end I use near each end of preferably the upper jack-spool E a spool K, which is wide enough to rest with stability on its driving-pulley when a large quantity of waste ends are wound upon it. Each of these waste-end spools consists of a spindle o , a barrel x , centrally pierced by said spindle, (see Fig. 2,) a circular washer O', pierced at its center to pass over one end of spindle o and to rest against the end of barrel x , and a similar circular washer O, adapted to pass over the other end of spindle o and to rest against the other end of barrel x and preferably fixed thereto. The barrel x should be a little shorter than the space between the guides I I, and the ends of spindle o should project enough to rest against the front sides of said guides. These guides I I are made to correspond with barrel x , so that the washers O O' rest snugly between them and the ends of barrel x , and thus said washers are held in place by said guides when the spool is in place. The washers prevent the roving from falling off the spool or from getting wound on the spindle and generally keep the roving in a compact closely-packed condition, and at the same time they serve to prevent the spools from falling off sideways on account of their position outside the small driving-drums H and inside the guides I I. They also prevent the side ends when the spools are well filled from rubbing against guides I I and interfering with the rotation of the waste-end spools. To give a motion to these waste-end spools, which will cause them to wind the waste-end roving at the same rate as that on the jack-spools, I provide the supplementary driving-drums H, which are of the same width as barrel x and the same diameter as the main drums E and F and are carried, one at each end, by the same shaft as (preferably) the upper jack-spool-driving drum E. The waste-end spools K rest on and are rotated by these supplementary drums H by circumferential friction, and as the small drums H are of the same diameter as the large drums E and F the waste ends are wound up at the same rate as the good ends, no matter how much or how little roving is packed upon the waste-end spools. This is necessary, for if the waste ends were wound up faster than the good ends there would be a drawing or tearing thereof and the ends would break, while if they were wound up more slowly than the good ends they would sag and finally drop into the machinery or onto the floor.

If the roving were allowed to wind upon a small spool without washers, such as is shown in Fig. 3, in which y is the spindle and x is the barrel, it would pile up, as shown in the dotted lines. It is especially necessary in my invention on account of the length of the barrel of the waste-end spool that the sliver should be wound evenly along the whole width of the spool. If the sliver were allowed to bunch in the center, the spool would wobble and tip over, causing the washers to be caught on their rims by the driving-pulley, which would throw the whole spool onto the floor, or if it did not do this after a time the sliver would sag and fall into the machinery or onto the floor.

In the more common class of engines, where-in vibrators are used on account of the extra width of my waste-end spools, the end eyes of the jack-spool vibrator cannot be used, and in order to lay the waste ends the entire width of my waste-end spools I must use either an independent vibrator with its own gears, crank, and arm, as shown in Fig. 4, or else I use the arrangement shown in Fig. 1 and Fig. 5. In this my preferred form of vibrator, as shown in Fig. 1 and in Fig. 5, I use an additional vibrator-bar T, which rests in guides U U, attached to the frame. At each end of this bar and opposite waste-end spools K, I attach a guide-eye t , which consists, preferably, of a flat piece of metal pierced with an oval eye, through which the waste end l passes. To give the much greater movement which is necessary for this vibrator than for M and N, I use a lever V, pivoted at w to lower vibrator-bar N and at v to bar T. This bar V is pivoted to a bracket W, which is attached to the frame at a point much nearer to bar N than to bar T, and thereby a proportionately greater throw is given T than N. Lever V is slotted at pivot v to take up any lost motion and permit bar T to slide evenly. Bracket W is so placed as to give guide-eyes t t a movement equal to the length of barrel x .

In machines where no main vibrators are used I use an independent vibrator-bar, which is the same as T, Fig. 1, and operate it by the mechanism shown in Fig. 4. I use a propelling-arm 5, bevel-gears 1 and 2, similar to those shown in Fig. 1; but the crank-arm 3 is enough longer to give the longer throw which is necessary, and the whole device is placed nearer the guides U U. Motion is taken from the shaft e of pulley E by means of sprocket 6, carried thereby, through chain 7 and sprocket 8, carried by the same shaft as bevel-gear 1. This independent mechanism may be used on any machine; but it is unnecessary where main vibrators are used.

Referring to Fig. 3, the curved dotted lines show about the form in which the roving would wind on the waste-end spool if no vibrator were used, while the straight dotted lines of Fig. 2 show the much greater quan-

tity which can be laid on when a vibrator and the washers O and O' are used.

My waste-end spools thus wind up such a quantity of waste ends that they need to be 5 stripped only once in from two to five hours or while several jack-spools have been filled. When the spools are sufficiently filled, they are taken out of the guides I I, the loose washer O' is removed, and the roving is pulled 10 off the end of the barrel α , torn up and thrown into one of the breakers. This stripping is necessary so infrequently that it is worth while for the attendant to take the roving directly back to the breaker without throwing 15 it upon the floor or into a waste-box.

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

1. In a finisher-card, a waste-end spool consisting of a spindle, a barrel axially pierced 20 by said spindle, a guard or washer centrally affixed to one end of said barrel, a loose washer centrally pierced and adapted to pass over an end of said spindle and to rest against the other end of said barrel, combined with two 25 upright standards adapted to serve as back guides for the ends of said spindle and fixed to the frame of the card at a distance apart sufficient to allow said washers when in place on the spool to pass between them whereby 30 the loose washer is held in place against the barrel and the ends of the spindle are guided as the spool is filled, a driving-pulley and a vibrator as described.

2. In a finisher-card a waste-end spool consisting of a spindle, a barrel axially pierced 35 by said spindle, a guard or washer centrally affixed to one end of said barrel, a loose washer centrally pierced and adapted to pass over an end of said spindle and to rest against the 40 other end of said barrel, combined with upright guides fixed to the frame of the machine at a distance apart sufficient to allow said washers when in place on the spool to pass between them whereby the loose washer is held 45 in place against the barrel and the ends of the spindle are guided as the spool is filled, and a small driving-pulley which is carried by an end of the upper jack-spool-driving-drum shaft and is of the same width as the waste- 50 end-spool barrel and of the same diameter as the jack-spool-driving drums, whereby the waste ends may be wound upon said small spools at the same rate as upon the jack-spools, a jack-spool, and a jack-spool-driving drum, 55 as described.

3. In a finisher-card, a vibrator-bar carrying suitable eyes to guide the waste ends, guides for said bar, and a lever-arm which is pivoted at one end to said vibrator-bar, to the casing

of the machine, and to one of the jack-spool 60 vibrator-bars in such manner that the waste-end vibrator-bar is given a much greater throw than the jack-spool vibrator-bars, combined with a waste-end spool of a width equal to the throw of said waste-end vibrator-bar, 65 suitable guides therefor, and a driving-drum adapted to rotate said waste-end spool.

4. In a finisher-card, a vibrator-bar carrying suitable eyes to guide the waste ends, guides for said bar, and a lever-arm pivoted at one 70 end to said vibrator-bar, at its other end to the lower jack-spool vibrator-bar, and pivoted to the casing of the machine at a point much nearer said jack-spool vibrator-bar than the waste-end vibrator-bar, whereby the waste- 75 end vibrator-bar is given a much greater lay-throw than the jack-spool vibrator-bar, combined with a waste-end spool of a width equal to the throw of said waste-end vibrator-bar, suitable guides therefor, a driving-drum 80 adapted to rotate said spool all as described.

5. In a finisher-card, a supplementary vibrator-bar carrying suitable eyes to guide the waste ends, guides for said bar, and a lever- 85 arm pivoted at one end to said vibrator-bar, at its other end to the lower jack-spool vibrator-bar, and pivoted to the casing of the machine at a point much nearer said jack-spool vibrator-bar than the waste-end vibrator-bar, whereby the waste-end vibrator-bar is given 90 a much greater lay-throw than the jack-spool vibrator-bar and the waste-end spools may thereby be filled only after several jack-spools have been filled, combined with a waste-end spool consisting of a spindle, a barrel axially 95 pierced by said spindle and of a length equal to the throw of said waste-end vibrator-bar, a guard or washer centrally affixed to one end of said barrel, a loose washer centrally pierced and adapted to pass over an end of said spindle 100 and to rest against the other end of said barrel, upright guides fixed to the frame of the machine at a distance apart sufficient to allow said washers when in place on the spool to pass between them, whereby the loose washer 105 is held in place against the barrel and the ends of the spindle are guided as the spool is filled, and a driving-drum carried by the same shaft as one of the jack-spool-driving drums, of a diameter equal thereto and of a width equal to 110 the length of the waste-end-spool barrel.

In testimony whereof I have affixed my signature in presence of two witnesses.

ROBERT B. ROBINSON.

Witnesses:

JOHN A. GATELY,
JOHN J. DEVINE.