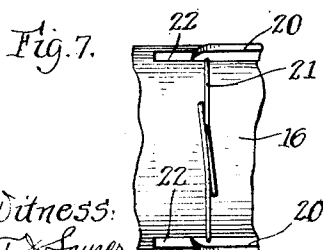
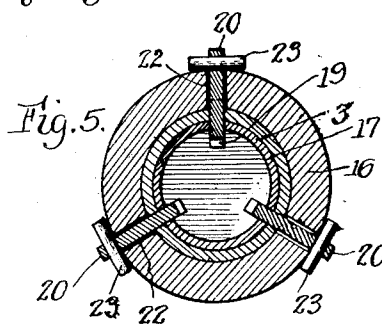
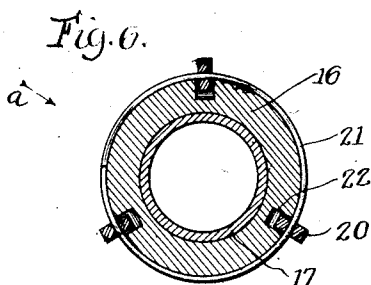
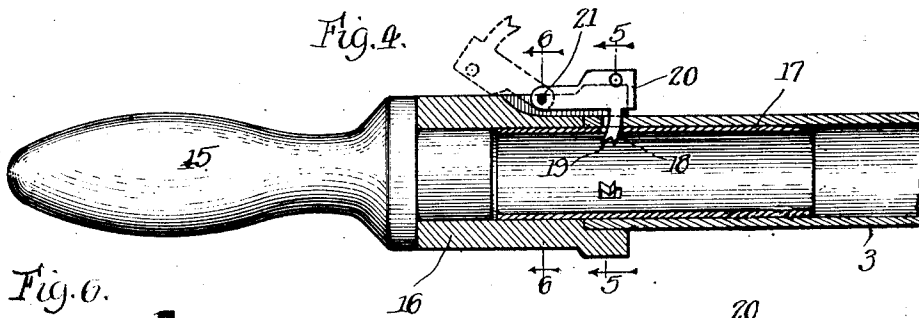
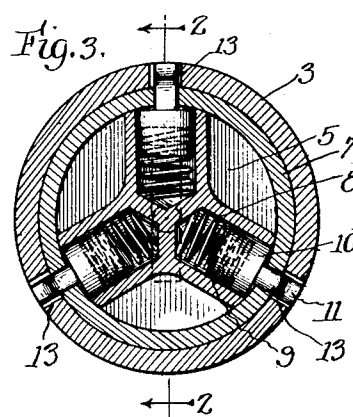
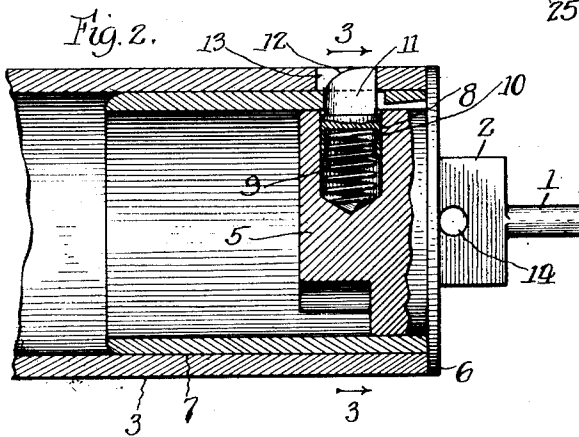
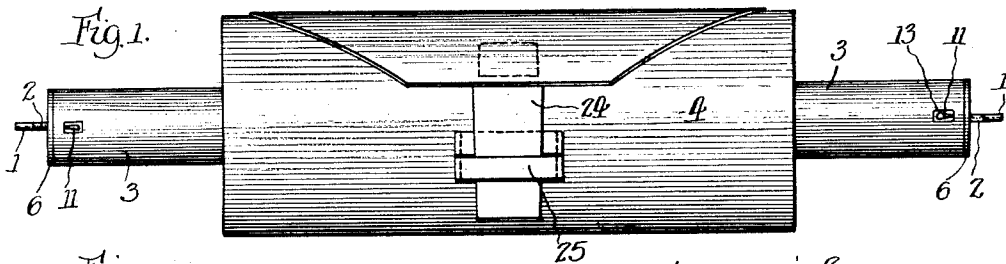


May 1, 1928.

1,667,916

W. E. WILLIAMS
SPINDLE FOR GELATIN ROLLS

Filed March 7, 1925



Witness:
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Patented May 1, 1928.

1,667,916

UNITED STATES PATENT OFFICE.

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SPINDLE FOR GELATIN ROLLS.

Application filed March 7, 1925. Serial No. 14,353.

My invention relates to the spindles used for gelatin rolls that are used for copy printing on the hectograph principle and the object of the invention is to produce a simple and cheap spindle that will have sufficient strength and normal life to be equivalent to the normal service of the roll which is wound upon the spindle, the point being to make the spindle as cheaply as will render the service for any given single unitary use of a gelatin roll as a matter of economy in saving expense.

The hectograph principle of making copies from a gelatin pad has been highly developed in the form of putting a thin gelatin coating upon a sheet of waterproof paper or cloth and then making this in the form of a band of suitable length winding the band upon itself upon a spindle.

These rolls as bands as normally used run in lengths of about 15 feet and when wound on the spindle they make a roll body of four to four and one-half inches in diameter, depending, of course, upon the desire and purpose for which the gelatin rolls are used.

It has been the practice of some manufacturers to make the spindles upon which these gelatin rolls are wound and carried in transit of a form that is adapted to be inserted in a machine and the roll to be wound and rewound upon this same spindle which, as it were, becomes a part of the gelatin sheet unit itself.

Thus in making these spindles of a form that is adapted to be used in a machine the spindle becomes quite an item of cost and by my invention I seek to bring about a saving in the service rendered in this connection.

Reference will be had to the accompanying drawing in which Fig. 1 is an elevation of a gelatin roll wound upon one of my spindles.

Fig. 2 is an enlarged view showing a vertical section through the end of one of these spindles on line 2—2 of Fig. 3.

Fig. 3 is a transverse view of the end of the spindle on line 3—3 of Fig. 2.

Fig. 4 is a longitudinal vertical sectional elevation of a tool that is used in making perforations in the ends of the spindle tubes.

Fig. 5 is a transverse section on line 5—5 of Fig. 4.

Fig. 6 is a transverse section on line 6—6 of Fig. 4.

Fig. 7 is an elevation of that portion im-

mediately adjacent to the section of Fig. 6 looking in the direction of the arrow *a*.

Heretofore the spindles of this class have been made out of wood and there has been provided some metal gudgeons which have been fastened into the ends of the wood in a permanent association.

The gudgeons were provided with small cylindrical shaft end pieces 1 integrally with a flat metal plate piece 2 and this flat plate piece was extended into a slot in the body of the wooden spindle and riveted therein. (This last feature not shown in drawing.)

In place of the wooden spindle, I provide a tubular paste board spindle indicated by 3, made out of straw board or other suitable material and onto this spindle the gelatin roll 4 is secured and wound.

In place of the fixed gudgeons used with the wooden spindles, I provide some removable gudgeon plugs or blocks having the same spindle ends 1 and flat metal plate surfaces 2, but these pieces are secured in or become a part of a metal plug made in any suitable form and designed and adapted to be inserted into the hollow ends of the tube spindles 3.

These plugs or blocks here shown are composed of the body piece 5 into which the flat metal piece 2 is either inserted or becomes part of and this body piece 5 is provided with an end flange 6.

Over the body piece 5 there is secured a tubular plug end 7 which fits snugly over the body piece 5.

In the body piece 5 there are some small holes or cavities 8 in each of which is mounted a spring 9 which abuts and forces outward a small plug 10 which carries an outwardly projecting knife edge blade 11. The portions 10 substantially fill and slide freely within the cavities 8 and when the gudgeon pieces are assembled the knife edge blades 11 are pressed inward entirely within the cavity 8 in the body piece 5 and this permits the tubular piece 7 to be threaded over the ends of the knife edge blades 11 into cavities substantially the shape of these blades, and thus as it were, lock the body piece 5 and the tubular plug end 7 into a unitary gudgeon.

The paste board tube spindles 3 are apertured at their ends to accommodate the entry of the knife edge blades 11 and in order to permit the gudgeons to be entered in the

ends of the tubes 3 and also to assist in assembling the body piece 5 and the tubular plug end 7, the knife edge blades 11 are rounded on one edge as indicated by 12, Fig. 2.

In the use of the roll 4 in a machine the round ends 1 and the flat surface 2 are engaged in the machine and are revolved on these end pieces in the unwinding and winding up of the rolls on the spindles, the flat end pieces 2 furnishing the means for holding the spindle against rotation when desired, and for positively revolving it in winding up and unwinding the rolls on the spindles.

With the wooden spindles the gudgeon pieces as above stated are fixed in the ends of the spindles, but with the tubular spindles of paste board the knife edge blade 11 of the blocks 10 being entered into the apertures 13 in the ends of the tubes furnish a sufficient bond of my gudgeon with the spindle tubes to render the services needed in the work of winding and unwinding the rolls 4 and holding the rolls against such movement during the use of any given section of the roll in the art of copy work.

The gudgeons as I have shown them are furnished in sufficient number to each machine owner to provide gudgeons for a sufficient stock of rolls and spindles that any one user may have on hand at any given time. Then as the roll 4 wears out instead of throwing away the rolls and the wooden spindles heretofore used along with the rolls, or returning the spindles that carry with them the metal end plates 1 and 2, they simply withdraw these gudgeons from the ends of my paste board tubes and reinsert them in the new spindle tubes that come with the new rolls, so that any one user of a machine for doing this copy work with these rolls and my spindles need buy only a number of these removable gudgeons and insert them into and withdraw them out of the paste board spindles as required as the rolls are worn out and renewed.

The knife edge blades 11 on being withdrawn from the ends of the tubes cut themselves through the paste board, thus, as it were, assisting in removing the gudgeons.

These paste board spindles are made as cheaply as possible and are protected by a slight coating of suitable material being a wax, depending on the desire of the maker, that will prevent their break-down under moisture that may come from the association of the spindle with these gelatin rolls which are continually moistened in service.

In withdrawing the gudgeons from the ends of the rolls I prefer to use a hook which is inserted in the hole 14, Fig. 2, which thus will give a purchase that will enable the operator to withdraw the gudgeons and cut the ends of the paste board tubes out as the

knife edge blades 11 are withdrawn outwardly.

For the sake of economy, the paste board tubes 3 are made so light that it would be unwise for any person to use these tube spindles a second time and to emphasize this fact, the ends of the tubes are cut as described in withdrawing the gudgeons.

Whereas, with the old style of wooden rollers the metal end piece which went with the spindles all the time performed the service of wearing out a single gelatin sheet roll, with my removable plug gudgeons the same set of gudgeons may be used as often as the operator may wish and not be compelled to buy wooden spindles for each gelatin roll and in this respect there is a great saving in expense by my invention.

In order to properly perforate or make the apertures in the ends of the tubes, to fit the knife edge blades 11, I provide a simple hand tool shown in Figs. 4, 5, 6 and 7, composed of a wooden handle piece 15 fixed into a block 16 into which is fixed a tube piece 17 adapted to be entered into the inside of the tubular spindles 3.

This tube piece 17 is provided with apertures 18 adapted to become the female dies for a series of punches 19 which are a part of blocks 20 hinged on a circular wire 21 extending around the block 16.

The block 16 is apertured to seat and guide the blocks 20 by the apertures 22. The blocks 20 are provided with cross pins 23 adapted to limit the travel of the blocks 20 on their inward stroke cutting the little apertures into the ends of the tubes 3.

These blocks 20 are forced home in the punching action by any suitable means such as a hammer that is used to drive in a single one of them at a time or by a ring cam block which may slide over the body of the block 16 and engage all three of these blocks 20, simultaneously, and thus bring about the perforation of the ends of the paste board tube pieces 3 as desired.

The roll body 4 is provided with any suitable means to hold the same in a wound up condition in the handling and storing of these rolls outside of the machine, but I have here shown a strap 24 the end of which is entered into some tuck-keeper portions 25, see Fig. 1.

This feature of the roll device is the subject of another application for Letters Patent.

What I claim is:

1. In a device of the class described, gudgeon blocks adapted to be inserted on the inner ends of tubular spindles and provided with spring actuated radially projecting blocks adapted to prevent rotation of the gudgeon blocks as relates to the spindle and to be sprung into the ends of the tubular spindles and to cut their way

out in the material of the tubular spindles as the blocks are withdrawn from the spindles.

2. A tubular spindle provided with gudgeon plugs mounted in the ends thereof in demountable fashion and said gudgeon plugs composed of tubular plug end pieces provided with a plurality of radial apertures into which are secured body pieces and said body pieces carrying radial outwardly pressed projections having lateral cutting edges extending out through said apertures in the tubular end pieces and said body pieces having end trunnions upon which the plugs and spindles are carried and revolved in the service of the spindle.

3. A tubular spindle of fragile material having radial apertures near each end, adapted to be engaged at its ends by gudgeon blocks in detachable arrangement, gudgeon blocks adapted to extend into the ends of the said tubular spindle for a distance at each end and said blocks having flanges adapted to abut against the ends of the tube and be held in place within the tube by the means of radially extending projections provided with lateral spindle cutting edges on the gudgeon blocks entering apertures in the walls of the tube.

4. A tubular spindle; in combination with gudgeon blocks adapted to be inserted in and withdrawn from the ends thereof and

said blocks provided with radially extending knife edge projections adapted to engage the spindle against rotation and cut their way out on their withdrawal from the tube.

5. A tubular spindle of relatively fragile material provided with radial apertures near each end, provided with gudgeon blocks located in the ends thereof and engaged to the spindle by projections provided with lateral cutting edges passing through apertures in the walls of the spindle and said projections adapted to spring into the ends of the spindle and cut their way out on the removal from the spindle.

6. In a device of the class described, a gelatin roll strip secured to and wound upon a tubular spindle and the said spindle composed of relatively fragile material for a single service feature, with gudgeon blocks adapted to engage the ends of the said spindle by means of resiliently pressed radial projections provided with lateral cutting edges on the gudgeon blocks, and said projections adapted to damage the ends of the spindle to permit the removal of the gudgeons from the spindles.

Signed at Chicago, in the county of Cook and State of Illinois, this 5th day of March, 1925.

WILLIAM ERASTUS WILLIAMS.