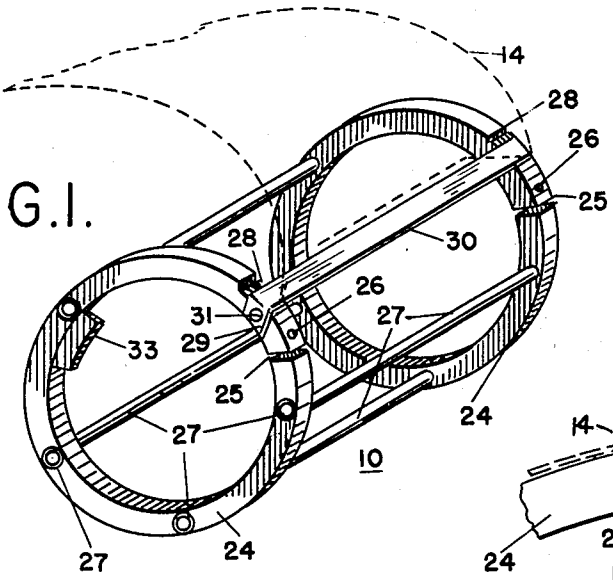
Aug. 19, 1958 T. A. GUNTER 2,848,176

TAKE-UP DRUM FOR PHOTOPRINTER

Filed June 17, 1955

FIG.1.



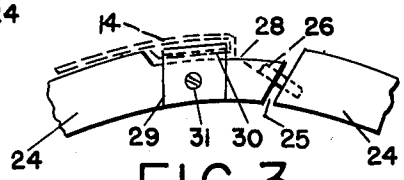


FIG.3.

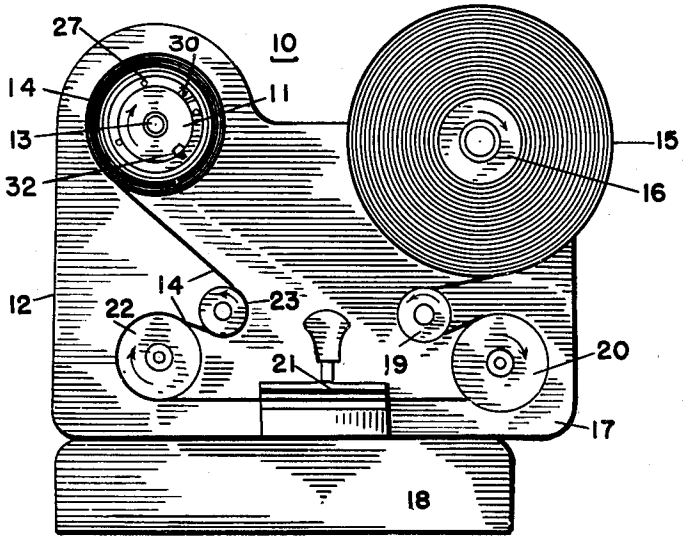


FIG.2.

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United States Patent Office 2,848,176 Patented Aug. 19, 1958

2,848,176

TAKE-UP DRUM FOR PHOTOPRINTER

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Application June 17, 1955, Serial No. 516,093

3 Claims. (Cl. 242—72)

This invention relates to machines for the printing of photographic strips and more particularly to drums or spindles for carrying the taking up roll of positive prints on a rapid printing machine as they are processed.

In a certain type of commercially available photographic machine employed for the rapid printing of flexible paper prints from celluloid films, the sensitized paper is mounted on a supply spindle or drum in a roll and is unwound by being pulled over a series of pulleys by the pulling tension of a take-off spindle rotated by a motor. In its travel, the sensitized paper is aligned with a negative located suitably. The activating mechanism for making it transmit its pictorial details and print them on the positive printing surface provided by the paper, provides the necessary means for its development. The take-off spindle, as it is commercially termed, provides the necessary tension for pulling the paper through the mechanism and as a means for winding up the exposed printing paper in a roll. It is customary to attach the end of the paper to the collecting roll sleeve with adhesive paper or "Scotch" tape. This takes an appreciable amount of time and effort. It is also a considerable item of cost. In fact, the use of the machine in conventional practice, requires quantities of "Scotch" tape amounting to several hundreds of dollars worth in a year, even though obtained at wholesale rates. Further the "Scotch" tape brings about a number of problems of its own, due to its stickiness, irregularity of cutting; misplacement during the attachment of the paper on the spindle (often enough to cause it to run out of line, and to require readjustment), trouble experienced in getting the tape off its own roll, as well as off the paper and spindle or collecting roll at the end of a run. In this invention the "Scotch" tape is made unnecessary by the use of an auxiliary drum placed on the spindle and adapted to secure the feeding end of the printed paper, as well as fit adjustably tight on the spindle. This enables the roll of printed photographic paper to become a separate unit removable from the spindle easily and quickly, and processed to meet the requirements of the customers for their individual prints, cut from the roll.

It is an object of the invention to provide a new and improved take-up drum for a photographic printing machine that will avoid some of the disadvantages and limitations of the prior art.

Another object of this invention is to provide a new and improved take-up drum for a photographic printing machine that can fasten the printed medium to the drum without the use of fastening material such as "Scotch" tape and the like, and perform the functions intended of it effectively.

A further object of the invention is to provide in a photographic machine a new and improved take-up means for securing the printed positive copies of the negatives in the form of a roll that will be self securing and designed to hold the copies in place without the use of adhesive material and provide for the easy removal of the printed copies from the take-up drum.

An additional object of the invention is to provide a new and improved take-up drum that will serve as an auxiliary device to the conventional take-up spindle provided in the assembly of a photographic printing machine, and enabling the printed copies processed in the latter to be secured to the drum and wound up thereon without the use of additional fastening means, and when so wound, to be removable as a unit.

Other objects of the invention will become apparent as it is described in more detail.

For a better understanding of the invention and the objects thereof, reference is made to the accompanying drawings, in which a particular form of the invention is indicated by way of example, the details of construction and the method of operation of which are described in the following specification.

In the drawings:

Figure 1 is a perspective view of a take-off drum embodying this invention;

Figure 2 is a side elevation of a conventional photographic printing machine on which the drum indicated in Figure 1 is mounted; it is displayed in order to portray the general operation of the printing machine and take-off drum; and

Figure 3 is a detail in elevation of a portion of the split rings used in the structure of the drum.

Similar reference characters refer to the same parts through the drawings.

Referring to Figure 1, which shows the structure of an auxiliary take-off drum **10**, adapted for placement on the conventional take-off spindle **11** of a photographic printing machine **12**. The machine **12** is of a commercial type used by the photographic trade, and is motor operated. The motor (not shown) rotates the shaft **13** of the take-off spindle **11** and provides the necessary tension to pull the photographic paper **14** through the machine and wind the latter up. The sensitized paper **14** runs about 1000 feet to a roll and is supplied in a roll **15** and mounted on a supply spindle **16**. The spindles **11** and **16** are supported on the wall of a frame **17** designed to retain all the parts in position. A base **18** supports the frame. The paper **14** is carried from the roll **15** and run over an idler pulley **19** thence continuing over an aligning pulley **20**. The paper **14** passes through the printing section **21** in a horizontal direction to follow through on another aligning pulley **22** at the opposite side. The paper **14** travels over an idler **23** suitably tensioned, and is rotated over the take-off drum **10** and wound up into a roll, and ready for delivery to the developing machine. The operation is continuous until the whole roll **15** is used up. The mechanism, the materials and details involved in the machine producing the printed picture from the time it is unrolled from the spindle **16**, follows established practice, and need not be described herein, as such is appreciated by those skilled in the art. It is not claimed to be a part of this invention, although the latter is incidentally incorporated in it to function and improve the machine.

The take-off drum **10**, in the form illustrated, comprises a pair of split end rings **24** spaced apart to the width of the paper **14**. They are designed to open up slightly and leave an angular separation **25** between their individual ends. The separation can be varied adjustably by means of a screw **26** passing into the end portions of the rings. The screw may tighten or loosen each ring to establish the desired clamping hold, on the take-off spindle used. Transverse bars or spacers **27** extend between the rings and hold them apart in a substantial manner. The bars **27** are adjustably held in place by fastening their end portions into the rings. The bars are spaced to keep the frame of the drum as open as desirable

and also to make the latter conform with the width of paper to be wound up on it.

A recess **28** is provided in a selected portion of each ring **24** and holds the bent end flanges **29** of a transverse flexure fastening plate **30**. The flanges **29** are preferably held in place by screws **31** and maintain the level of the plate **30** preferably in line with the peripheral plane of the rings so the end of the photographic paper can be slipped under it easily, and the paper wound on the take-off drum **10** smoothly and without humps. When the paper **14** is inserted, it is bent back so as to be held securely to the drum, ready for winding. The conventional spindle **11** has a slot in its periphery of limited size. A key block **33** is provided on one of the rings **24** to fit in the slot in the spindle **11** and rotate the take-off drum **10**.

The drum **10** is employed in the following manner. It is slipped laterally on to the spindle **11** after its split rings have been properly adjusted to fit it. This adjustment may be accomplished by the screws **26** or the normal resiliency of the rings in some instances can do this. The key block **33** is fitted in place in the slot **32** in the spindle **11**. Then the paper **14** has its end portion slipped in under the thin fastening plate **30** for a short distance and bent back on itself to lay flat on the periphery of the rings **24** and be wound thereon to make the paper taut and pulling on the paper already located on and threaded over the various pulleys **23**, **22**, **20**, **19** and spindle **16** on which the roll of paper **15** is mounted. The sensitized paper is then ready for printing as it passes through the section **21**. The motor is started and revolves the take-up spindle **11** with the drum **10** attached to it. This pulls the paper through the machine, prints it, and rolls it up on the take-off drum **10**. When the roll **15** of paper is used up, and transferred to the drum **10**, the latter forms the foundation for the printed roll. The drum **10** with the printed roll on it is then removed, and another unfilled drum is mounted in its place. The drum **10** with the printed roll is then taken by the operator and developed, cut out, and sorted out to be placed in booklets and separate envelopes for delivery to the various customers. The next roll of paper **15** is placed on the spindle **16** and the process repeated.

The roll of printed film is held on to the drum without the use of "Scotch" tape or other adhesive material. The plate **30** does this and accomplishes it in a more expeditious manner. Also if the feeding end of the printed paper is torn or uneven, it is inserted far enough under the fastening plate **30** until the irregular end is out of the way inside the drum without needing to be trimmed or otherwise made to fit.

It can be bent to bring the attachment on the plate at any location of the paper desired at insertion. Another exceptional feature, is the facility with which the printed roll may be removed from the drum in its entirety. This is accomplished by inserting the fingers inside the drum through the openings provided by the rings, and detaching the inserted end of the paper at the fastening plate **30**, and giving it a slight rotative movement to release it. The printed roll may then be slipped off the drum and the latter reused immediately.

This take-off drum offers many advantages over the conventional arrangement for winding up the printed photographic paper on a card board sleeve to which it is attached by "Scotch" tape or gummed paper, and then placed in the machine referred to. It saves time, avoids many difficulties especially those involved in the use of "Scotch" tape to hold the printed paper to the cardboard sleeve, and in doing so does not require much additional cost. Such additional cost as may be required is offset by the saving of many times the expense involved in adding it to the machine. Since the drum is open, it is light and to a certain extent avoids damage to the surface of the printing, and in fact also improves the printing capacity of the machine. It can be kept clean because of this avoidance of contact surface, and thereby lessen the chances of the prints being smeared or otherwise soiled. The fingers in the takeoff drum **11** when the cardboard tube is used, cause dust to be formed by the gripping fingers slipping in the cardboard tube. This dust is deposited on the printed pictures as well as gumming up the machine, and this causes spoilage to many finished pictures as well as requiring that the machine be cleaned many times.

While but one general form of the invention is shown in the drawings and described in the specification, it is not desired to limit this application for patent to this particular form as it is appreciated that other forms of construction could be made that would use the same principles and come within the scope of the appended claims.

Having thus described the invention, what is claimed is:

1. A take-off drum comprising in combination, a plurality of rings spaced from each other in parallel relation, bars projecting from the walls of said rings and rigidly holding them together, a fastening plate extending between the rings and mounted on the periphery thereof and adapted to hold photographic paper rolled thereon, said ring being arranged to slip over the take-up spindle of a photographic machine and hold themselves thereon, said rings being split to enable them to be adjusted to fit on various sized spindles, and means for adjusting the split rings to increase and decrease the diameter thereof.

2. A take-off drum comprising in combination, a plurality of rings spaced from each other in parallel relation, bars projecting from the walls of said rings and rigidly holding them together, a fastening plate extending between the rings and mounted on the periphery thereof and adapted to hold photographic paper rolled thereon, said rings being arranged to slip over the take-up spindle of a photographic machine and hold themselves thereon, said rings being split to enable them to be adjusted to fit on various sized spindles, means for adjusting the split rings to increase and decrease the diameter thereof, means on one of the rings for driving the drum by said spindle, said fastening plate being held in line with the periphery of the rings to facilitate the insertion of the feeding end portion of said paper underneath it into the space provided in the drum between the rings.

3. A take-off drum comprising in combination, a plurality of rings spaced from each other in parallel relation, bars projecting from the walls of said rings and rigidly holding them together, a fastening plate extending between the rings and mounted on the periphery thereof and adapted to hold photographic paper rolled thereon, said rings being arranged to slip over the take-up spindle of a photographic machine and hold themselves thereon, said rings being split to enable them to be adjusted to fit on various sized spindles, means for adjusting the split rings to increase and decrease the diameter thereof, means on one of the rings for driving the drum by said spindle, said fastening plate being held in line with the periphery of the rings to facilitate the insertion of the feeding end portion of said paper underneath it into the space provided in the drum between the rings, said rings being open to allow access to the interior of the drum for manipulating the said inserted end portion of the paper therein, a slot being provided under the periphery of said fastening plate to bring the plate closer to the center of the ring and to facilitate the insertion of the end of said paper in back of the plate.

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