June 5, 1956 G. C. LOW 2,748,832

TAPE SPLICING APPARATUS

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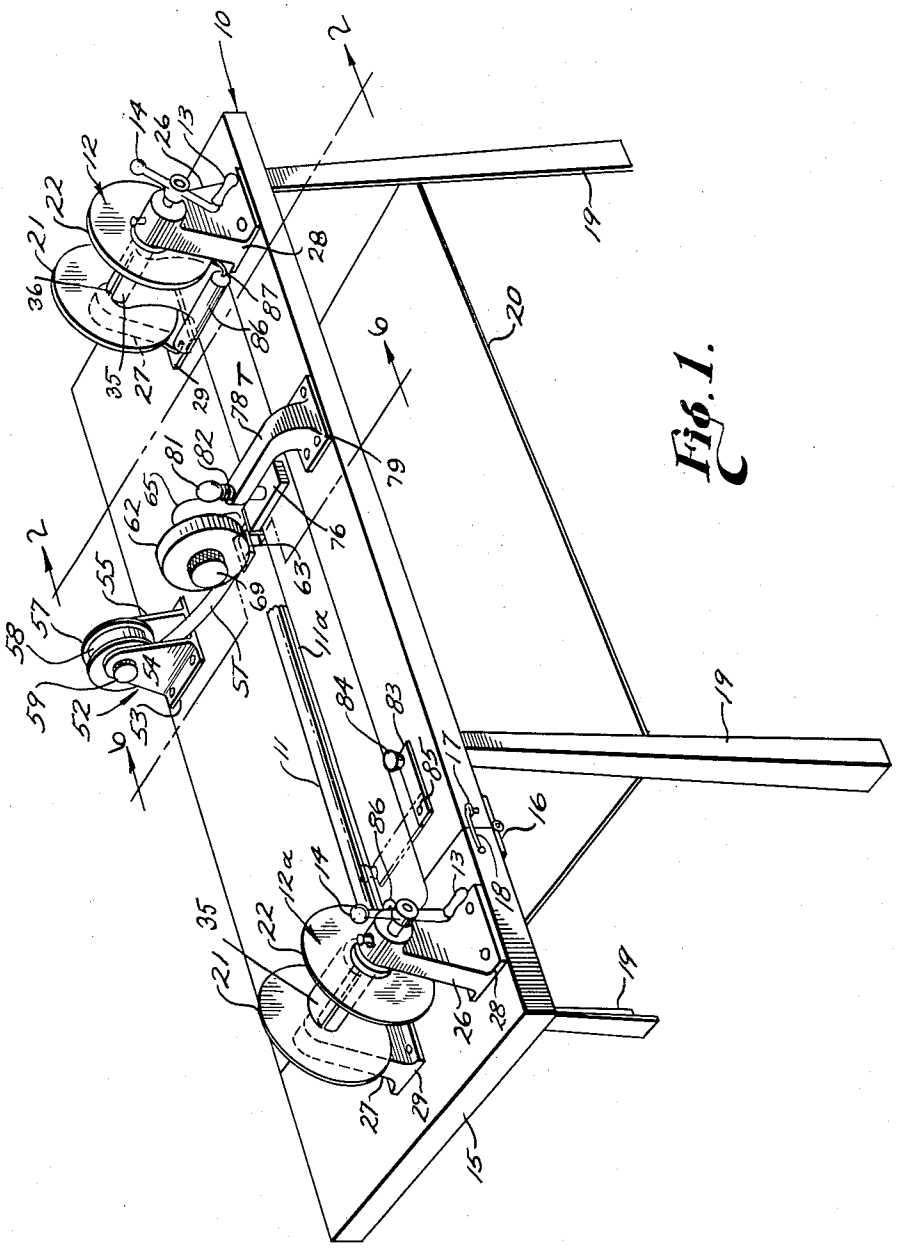


Fig. 1.

INVENTOR.
GERALD C. LOW
BY
H. G. Manning
ATTORNEY

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Fig. 2

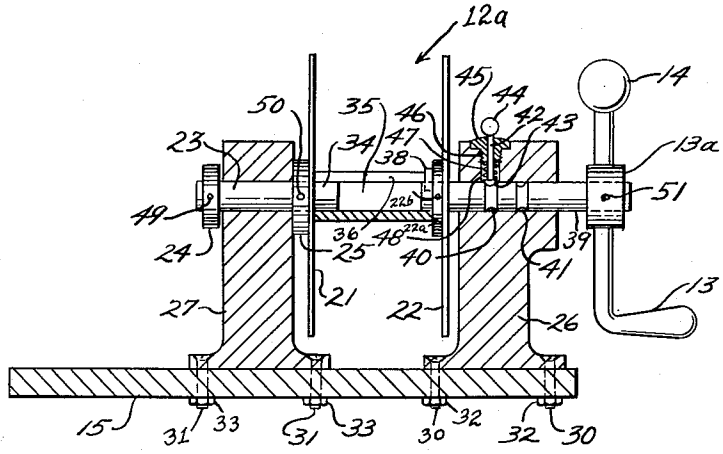


Fig 3

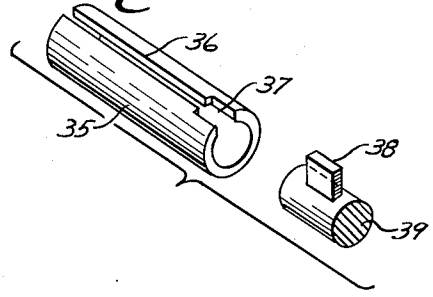
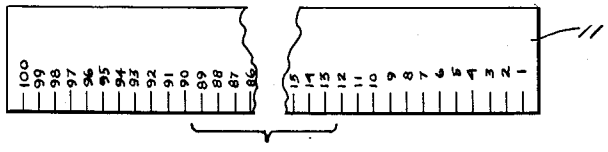


Fig. 4



INVENTOR.
GERALD C. LOW
BY
H. G. Manning
ATTORNEY

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Fig. 5

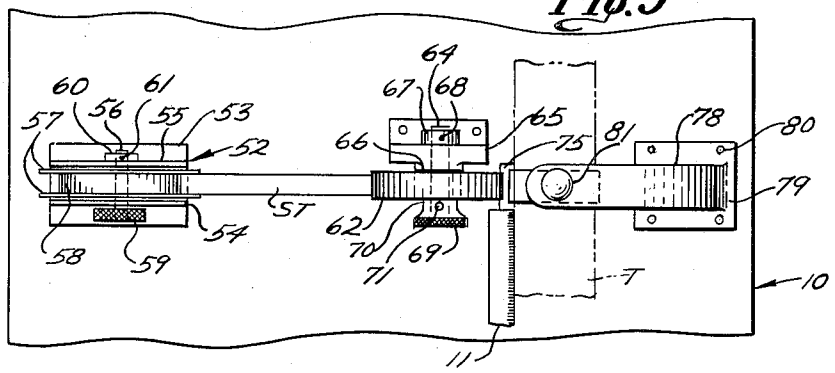


Fig. 6

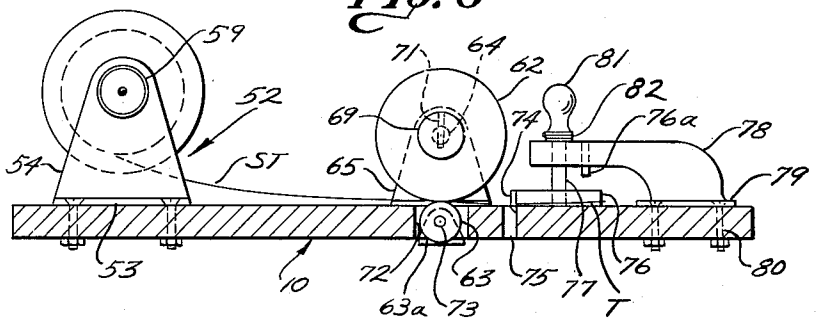
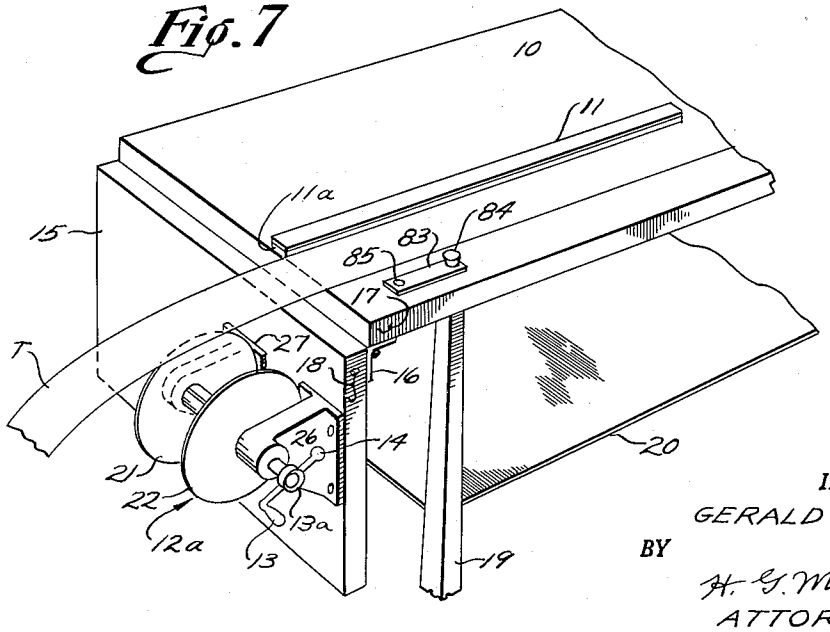


Fig. 7



INVENTOR.
GERALD C. LOW
BY
H. G. Manning
ATTORNEY

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TAPE SPLICING APPARATUS

Gerald C. Low, Watertown, Conn.

Application September 30, 1953, Serial No. 383,261

11 Claims. (Cl. 154—42.3)

This invention relates to tape splicers and more particularly to an apparatus for connecting the joints between successively fed paper strips by means of short sections of Scotch tape fed at right angles to the direction of the movement of the paper strips.

One object of the invention is to provide an apparatus adapted to join flat, flexible paper strips in end to end aligned relationship in the same plane.

This is accomplished by attaching under the adjacent, abutting surfaces of the ends of paper tapes, short pieces of Scotch tape at right angles thereto by pressing said aligned tapes into firm adhesive contact with the Scotch tape located therebeneath.

A further object is to provide a device of the above nature, which will be simple in construction, inexpensive to manufacture, easy to install and manipulate, compact, ornamental in appearance and very efficient and durable in use.

With these and other objects in view, there has been illustrated on the accompanying drawings, one form in which the invention may conveniently be embodied in practice.

In the drawings,

Fig. 1 represents a perspective view of the entire tape splicing apparatus as it appears when mounted upon a table.

Fig. 2 is a cross-sectional view of the same taken along the line 2—2 of Fig. 1 showing the construction of the winding reels.

Fig. 3 is an exploded view of one of the hollow tape mandrels, and a portion of the forward drive shaft of a winding reel.

Fig. 4 is a plan view of the tape guiding scale located in raised position alongside of the path of the tape.

Fig. 5 is a top plan view of the splicing and cutting apparatus for feeding the Scotch tape at right angles to the paper tape strips.

Fig. 6 is a side view of the same, taken along the line 6—6 of Fig. 1, with a cross-section through the table.

Fig. 7 is a perspective view of the left-hand portion of the table, showing the rewinding reel and its supporting shaft swung down into inactive position.

Referring now to the drawings in which like reference numerals denote corresponding parts throughout the several views, the numeral 10 indicates a rectangular table having a guide scale 11 located in longitudinal position adjacent the center of the table. The guide scale 11 is held in raised position above the table by means of a vertical support 11*a* secured thereto.

In order to wind up into a roll the aligned sections of the paper tapes T after they have been spliced together, provision is made of a take-up reel 12, the shaft of which has a front handle 13 which is counter-balanced by a weight 14 located at the opposite side of said shaft from said handle. The handle 13 has an enlarged hub 13*a*.

Provision is also made of a shelf 15 connected to the left end of said table by a pair of hinges 16. This shelf 15 supports a rewind reel 12*a*, the construction of which

is identical with the take-up reel 12. The shelf 15 is adapted to be held selectively in horizontal raised position by means of a latch eye 17 and a swingable hook 18. The table 15 is provided with four angular legs 19 and a bottom shelf 20.

The take-up reel 12 is provided with a pair of front and rear circular flanges 21, 22, and also has a rear shaft 23 rigidly connected to the flange 21 by means of collars 24 and 25, said collars being adapted to engage the upper portion of the rear bracket 27.

Provision is also made of a front bracket 26, similar to the rear bracket 27, both of said brackets having bases 28, 29, which are secured by means of bolts 30, 31, and nuts 32, 33 to the table 10.

The shaft 23 is provided with a forward extension 34 which is adapted to fit within the rear end of a hollow mandrel 35 (Fig. 3), having a slot 36 extending throughout its length, said slot being adapted to receive the end of the first paper tape T which may be threaded therein for winding all of said paper tapes successively in a roll upon the take-up reel 12.

The slot 36 is provided with an enlarged forward end 37 for detachably receiving a rectangular drive pin 38 forming an integral portion of a forward shaft 39 having a pair of circular grooves 40, 41, which are adapted to selectively receive a vertical plunger 42 having a rounded bottom head 43 and a top handle 44.

The plunger 42 is mounted within a vertical bearing member 45 which has a threaded reduced lower end 46 adapted to be screwed within the front bracket 26. Provision is also made of a spring 47 which presses downwardly upon the rounded bottom head 43 of the plunger 42. The front bracket 26 also has a cylindrical recess 48 for receiving the spring 47.

The flange 22 has a collar 22*a* secured to the shaft 39 by a pin 22*b*.

The collars 24, 25 and the handle hub 13*a* are secured in place by means of pins 49, 50, 51, as clearly shown in Fig. 2.

Splicing apparatus

The splicing apparatus, for attaching the short sections of pressure sensitive materal, such as Scotch tape, transversely to the movement of the aligned paper tape T, comprises a rear bracket 52 having a base 53 secured to the table 10, as by screws, and said bracket 52 is provided with a pair of parallel upstanding side plates 54, 55 for detachably receiving a horizontal shaft 56 which holds a two-part spool 58 of Scotch tape.

Provision is also made of a knurled knob 59 on one side of the plate 54, which may be removed to permit the Scotch tape spool 58 to be taken out of the bracket 52 and replenished whenever necessary.

The knob 59 is mounted upon one end of the shaft 56, the other end of which is provided with a collar 60 secured to said shaft 36 by means of a pin 61.

At a centralized point on the table 10, provision is made of a pair of vertically spaced Scotch tape feeding wheels 62, 63, the former being relatively large with respect to the latter.

The bottom wheel 63 is mounted upon a shaft 73 carried by an angular bracket 63*a* secured as by screws, not shown, to one side of a slot 72 in alignment with the top feed wheel 62, the axis of which is directly above it. The large feed wheel 62 is mounted on a shaft 64 carried by a bracket 65 secured to the table 10 and is provided with a lateral hub 66 which engages one side of the large feed wheel 62. Provision is also made of a collar 67 secured to the shaft 64 by means of a pin 68.

The large feed wheel 62 is provided with a side knurled knob 69 having a circular reduced section 70 within which a set screw 71 is mounted, said set screw engaging the

shaft **64** for holding the large wheel **62** securely upon said shaft.

Provision is also made of a cutter blade **74** adapted to move up and down within a narrow slot **75** in the table **10** directly in front of and spaced from the slot **72**.

The cutter blade **74** is carried by a rectangular plate **76** secured to a vertical shaft **77** which is mounted to slide vertically within an angular bracket **78** having a base **79**, secured to the front of the table as by screws **80**.

The top of the shaft **77** is provided with a handle knob **81** which is pressed upwardly at all times by means of a spring **82**, (Fig. 6).

The pressure plate **76** is adapted to be limited in its upward movement by means of a vertical stop pin **76***a* on the bracket **78**.

Provision is also made at the lefthand portion of the table of a horizontal cutter member **83** for severing the tape at any point whenever desired.

The cutting member **83** has a handle **84** at one end, and a pin **85** at its other end for pivotally securing it to the table **10**.

Provision is also made of a pair of heavy transverse tension rollers **86** adjacent the reels **12** and **12***a* to press the tape down upon the table to prevent over-running.

The rollers **86** are carried upon U-shaped wires **87** secured to the brackets **26**, **27**, by means, not shown.

While there has been disclosed in this specification, one form in which the invention may be embodied, it is to be understood that this form is shown for the purpose of illustration only, and that the invention is not to be limited to the specific disclosure, but may be modified and embodied in the various other forms without departing from its spirit. In short, the invention includes all the modifications and embodiments coming within the scope of the following claims.

Having thus fully described the invention, what is claimed as new and for which it is desired to secure Letters Patent is:

1. In an apparatus for splicing ends of a pair of aligned paper tapes, a supporting table, and means mounted on said table to apply a short section of the end of a roll of pressure sensitive tape under the junction of the abutting ends of said paper tapes, means to cut said section of pressure sensitive tape from its roll, a take-up reel comprising a pair of flanges supported on shafts carried by a pair of front and rear brackets, said rear shaft having a forward extension, a slotted mandrel fitted over said rear shaft extension and over the rear end of said front shaft, said forward flange and its shaft being forwardly movable to permit removal of the mandrel from said reel.

2. The invention as defined in claim 1, in which said front shaft has a pair of spaced circular grooves for selectively receiving a manually releasable locking plunger mounted in said forward bracket.

3. The invention as defined in claim 2, in which spring means are provided for holding said plunger selectively in engagement with one of said grooves in the desired adjusted operating position of said front flange.

4. In a splicing apparatus for connecting the abutting ends of a pair of paper tapes, a manually depressible flat plate caried on the lower end of an upstanding plunger mounted in an overhanging supporting bracket, and means for feeding the end of a roll of pressure sensitive tape into alignment with and under the joint between said paper tapes and at right angles to said tapes comprising a pair of pressure wheels vertically positioned above and below said pressure sensitive tape.

5. The invention as defined in claim 4, in which said roll of pressure sensitive tape is mounted on a double flanged spool carried on a horizontal shaft located in a pair of upstanding supporting side plates.

6. The invention as defined in claim 4, in which said upper wheel is provided with an enlarged knurled knob for convenience in manually rotating the same to feed said pressure sensitive tape forwardly underneath the junction of said paper tapes.

7. The invention as defined in claim 6, in which a rectangular recess is provided in the table beneath said upper wheel, and said lower wheel and its shaft are mounted on a bracket detachably located in said recess.

8. The invention as defined in claim 6, in which said plate is provided with a rear cutter blade to sever the section of pressure sensitive tape behind the junction between said adjoining strips of paper tape.

9. The invention as defined in claim 8, in which a longitudinal slot is provided in the table beneath the cutter blade to permit the latter to pass down through said pressure sensitive tape without engaging said table.

10. The invention as defined in claim 1, in which a heavy transverse tension roller is provided adjacent said take-up reel to press the paper tape downwardly against a support and prevent overwinding.

11. In a splicer for aligned abutting strips of tape, a table, a take-up reel on one end of said table, a supporting shaft mounted on a shelf hinged to the other end of said table, and a reel on said shaft for winding up the tape in a reverse direction after it has first been wound up on the take-up reel.

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