Aug. 26, 1930. H. CARLE 1,774,420

MACHINE FOR JOINING PAPER STRIPS

Original Filed March 19, 1923 10 Sheets-Sheet 1

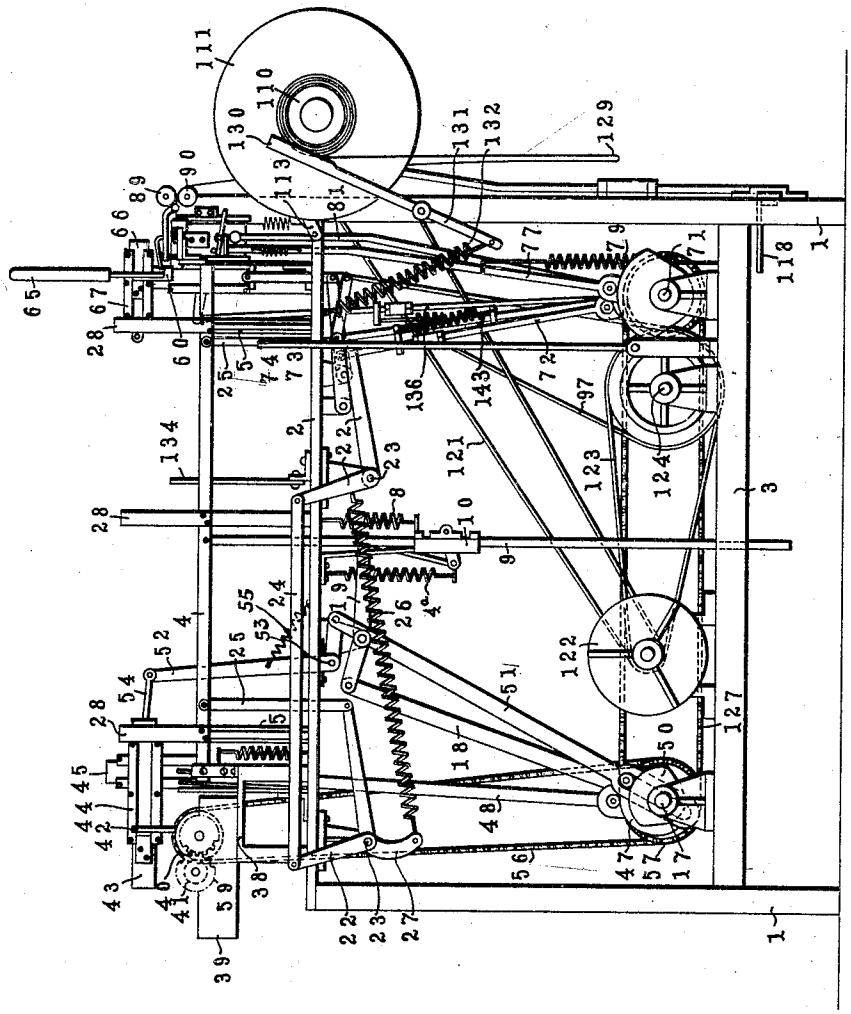


Fig. 1

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MACHINE FOR JOINING PAPER STRIPS

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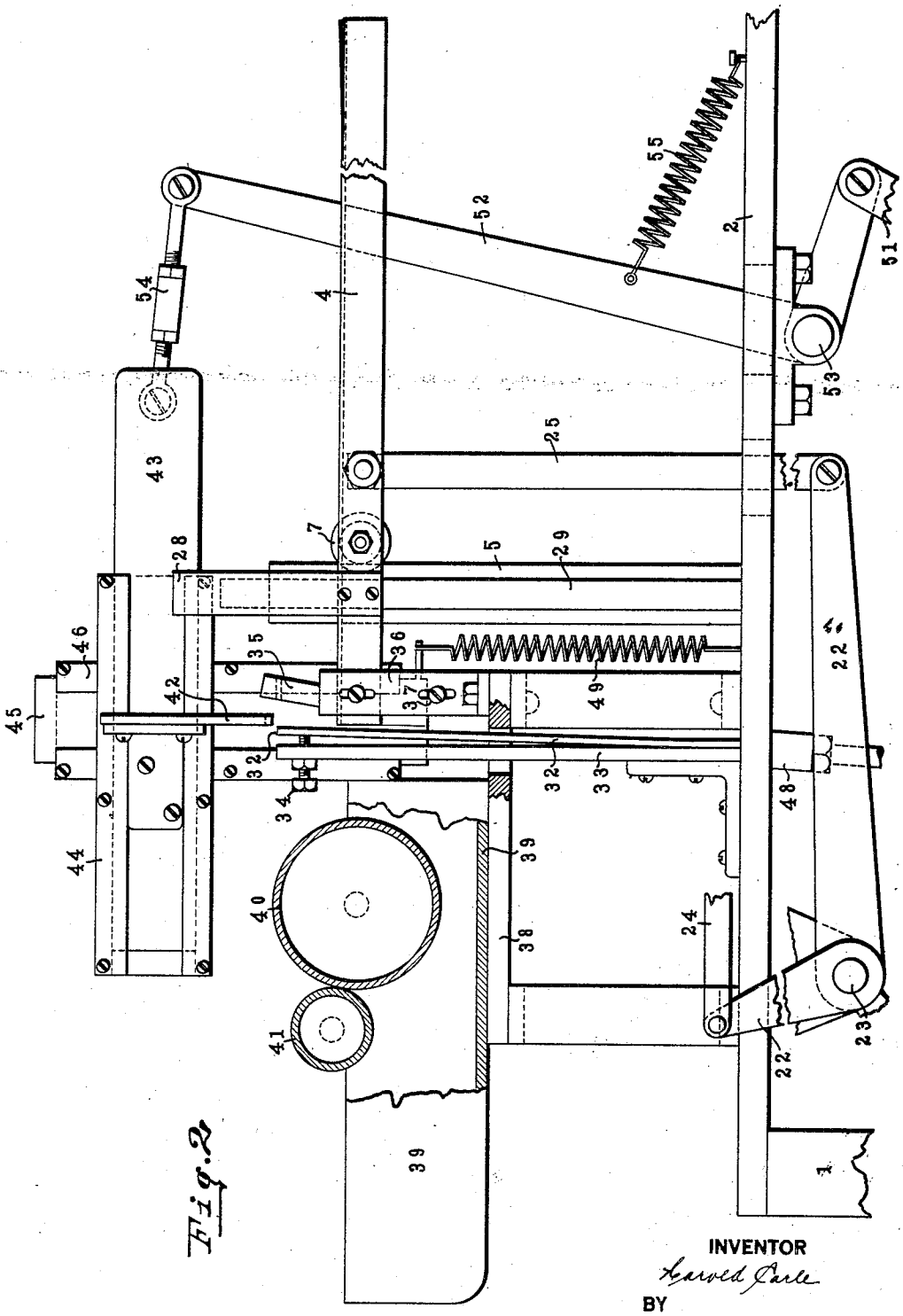


Fig. 2.

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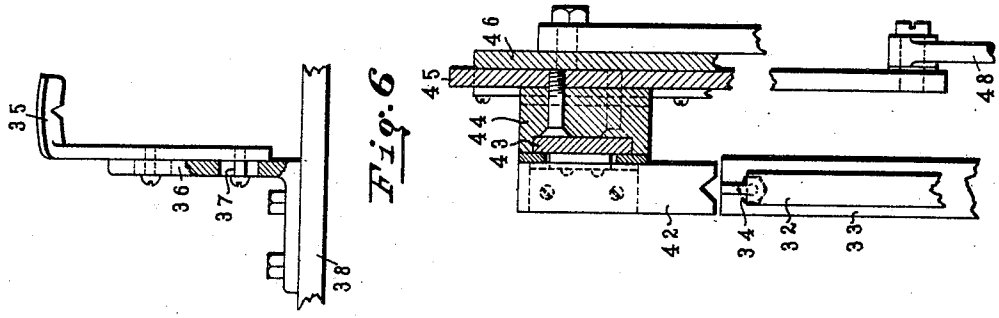


Fig. 6

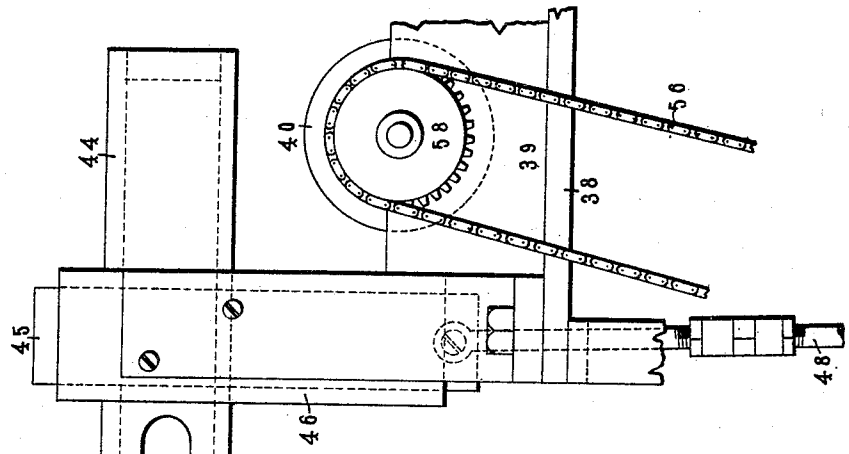


Fig. 4

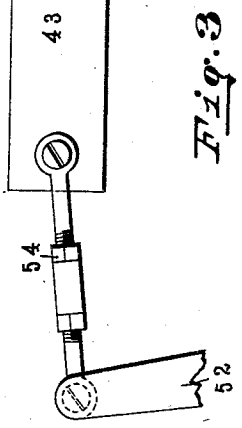


Fig. 3

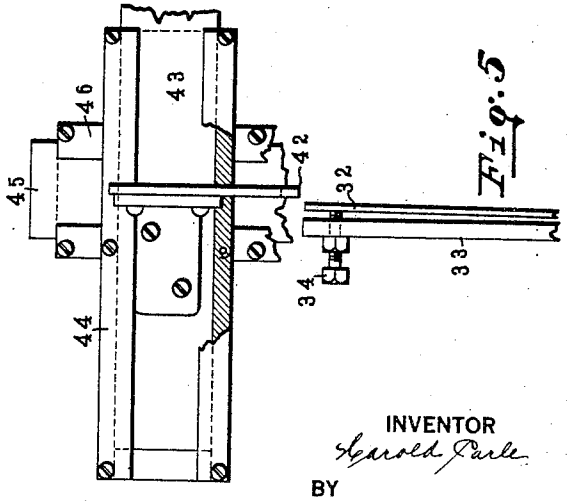


Fig. 5

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MACHINE FOR JOINING PAPER STRIPS

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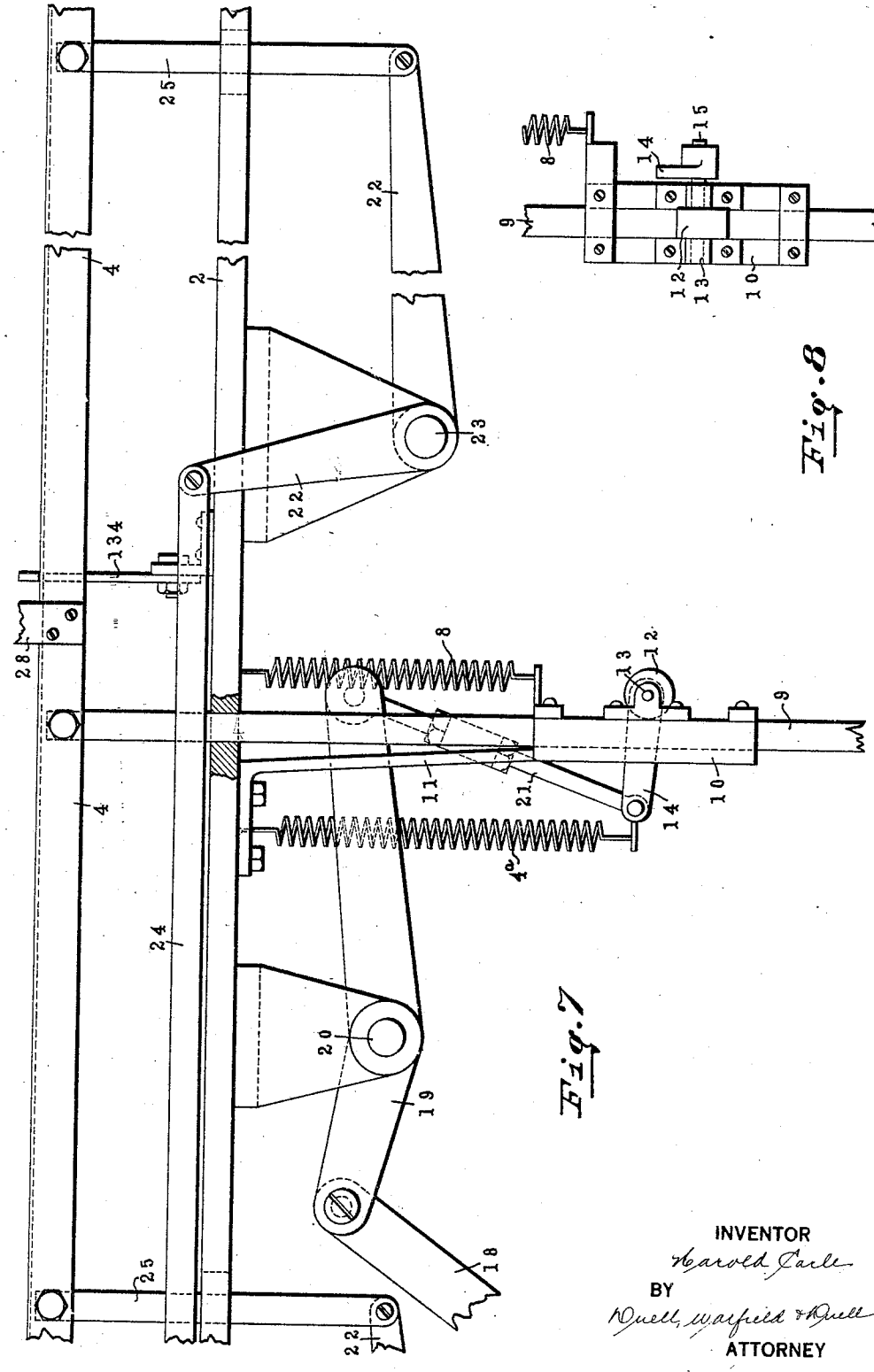


Fig. 7

Fig. 8

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MACHINE FOR JOINING PAPER STRIPS

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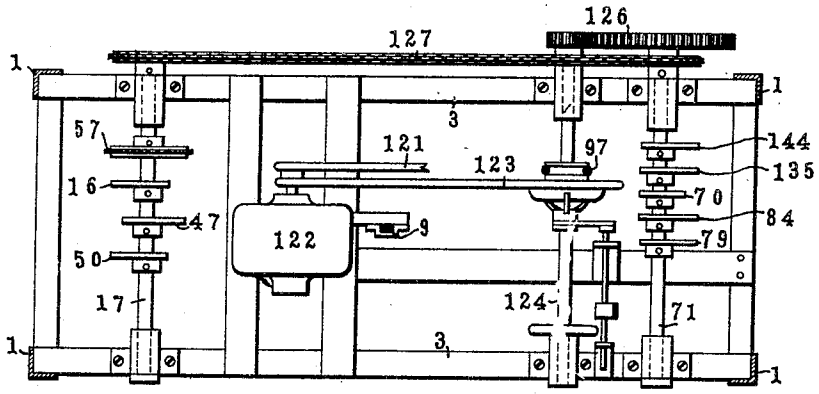


Fig. 18

Fig. 9

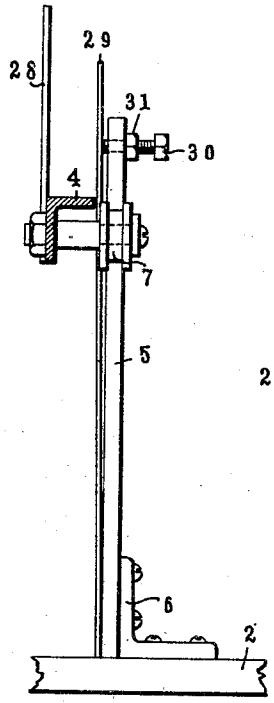
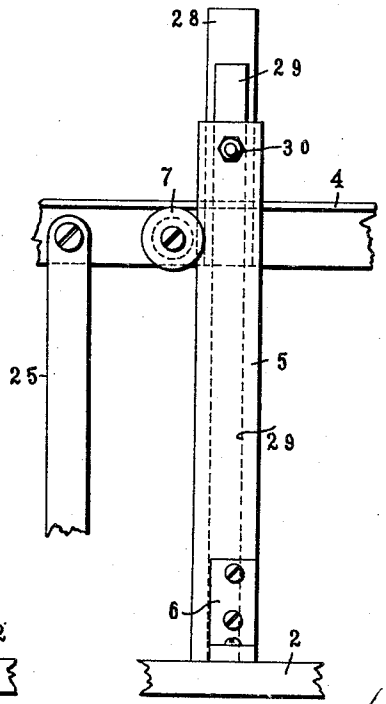


Fig. 10



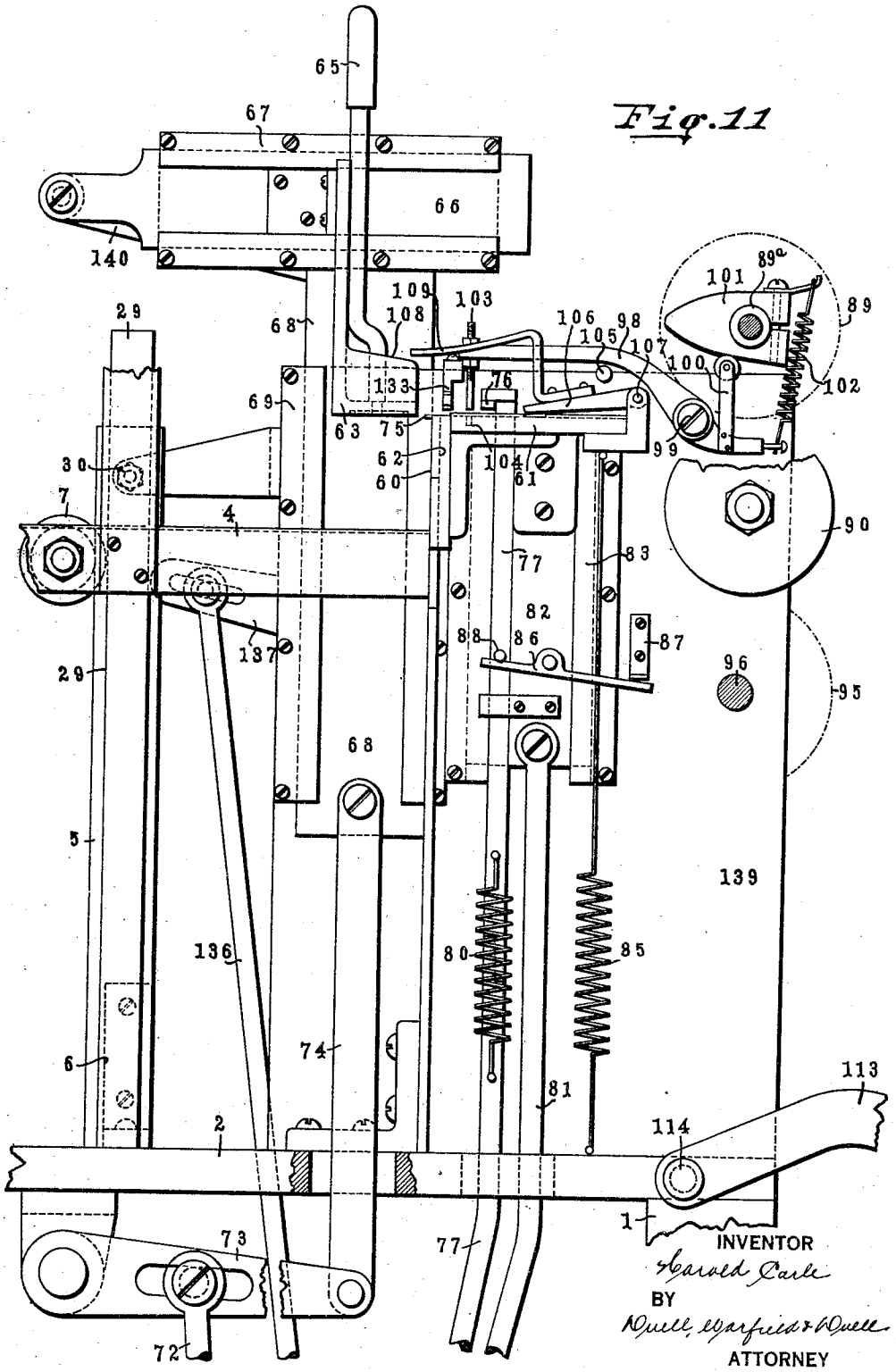
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MACHINE FOR JOINING PAPER STRIPS

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Fig. 11



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MACHINE FOR JOINING PAPER STRIPS

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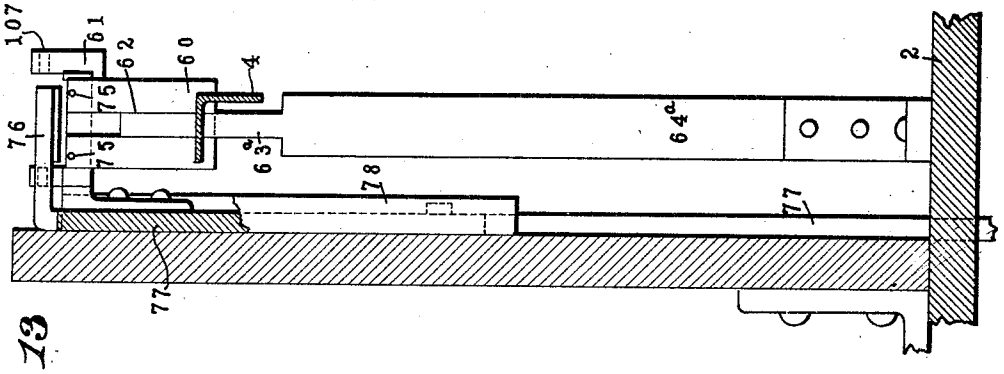


Fig. 13

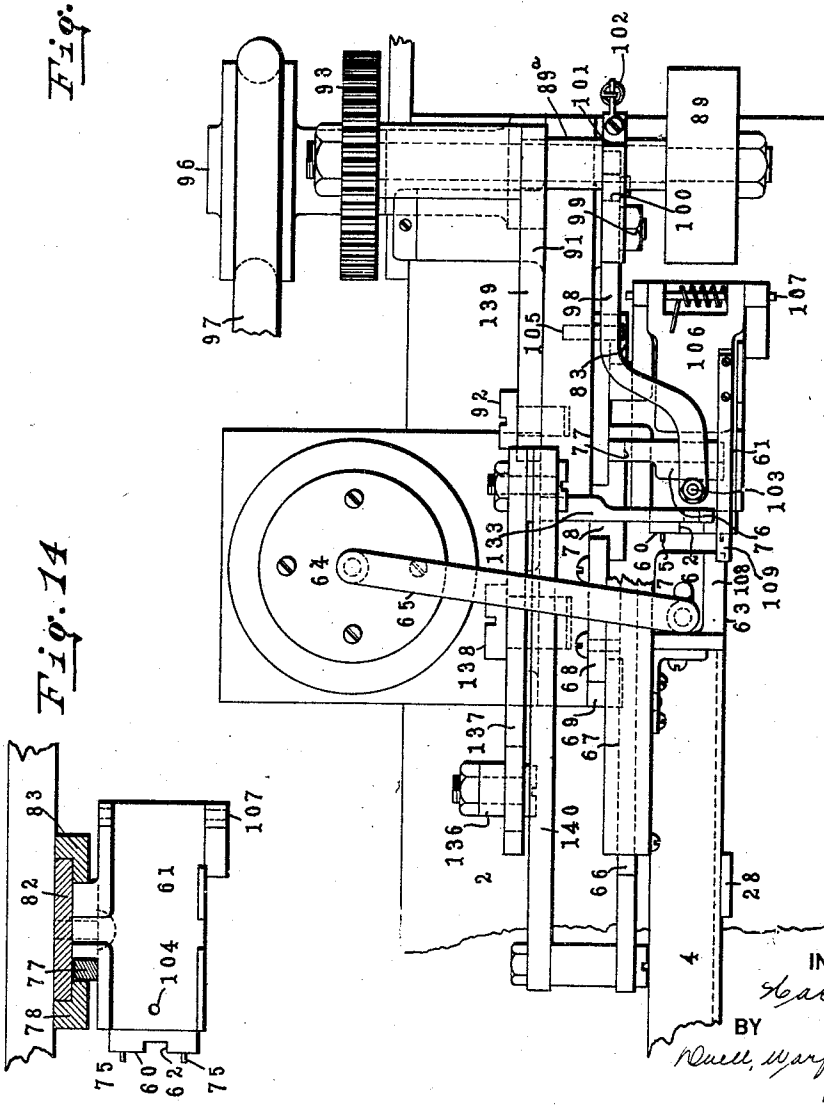


Fig. 12

Fig. 14

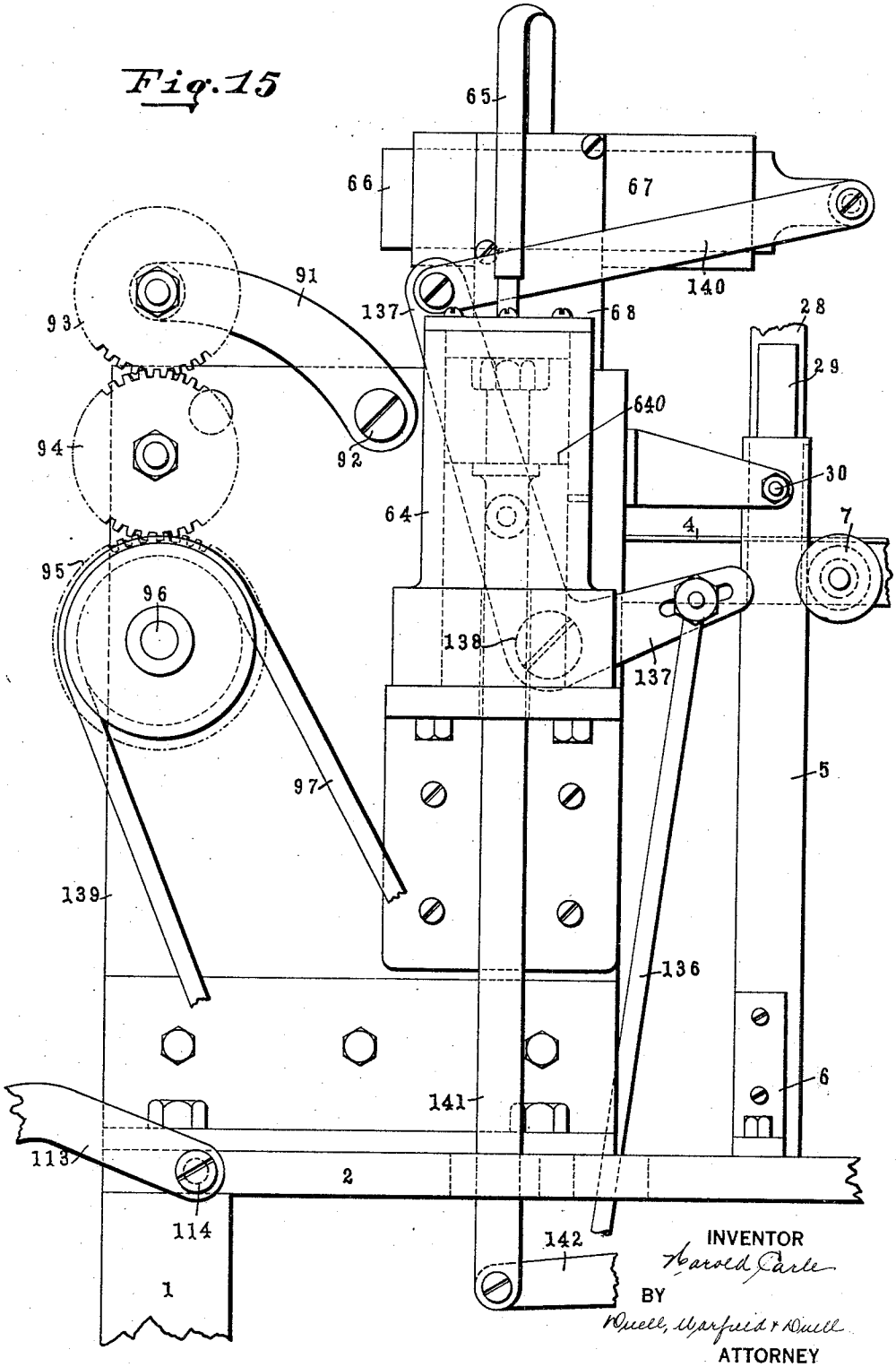
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MACHINE FOR JOINING PAPER STRIPS

Original Filed March 19, 1923 10 Sheets-Sheet 8

Fig. 15



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MACHINE FOR JOINING PAPER STRIPS

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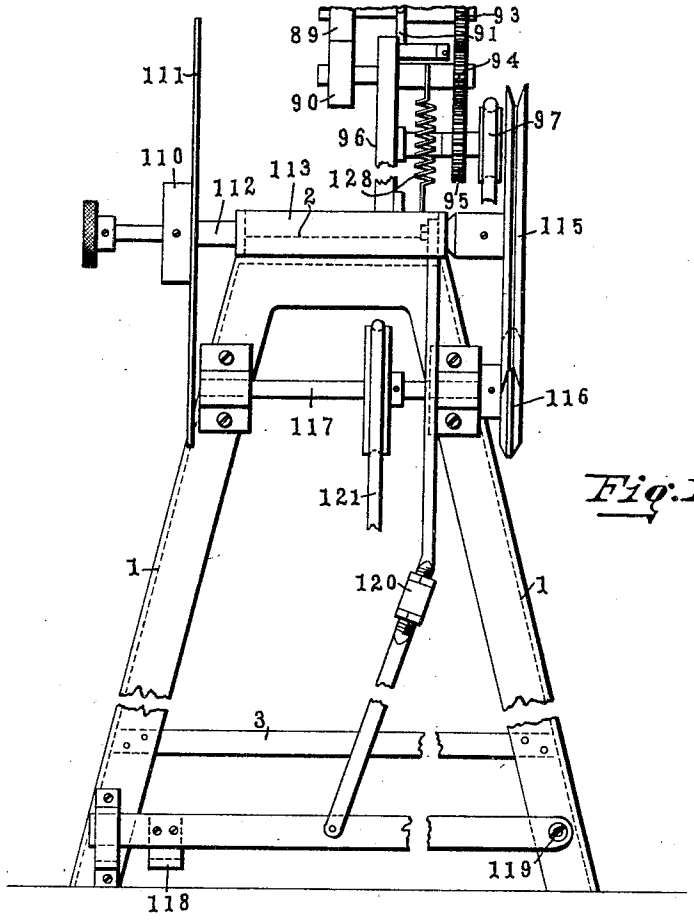


Fig. 16

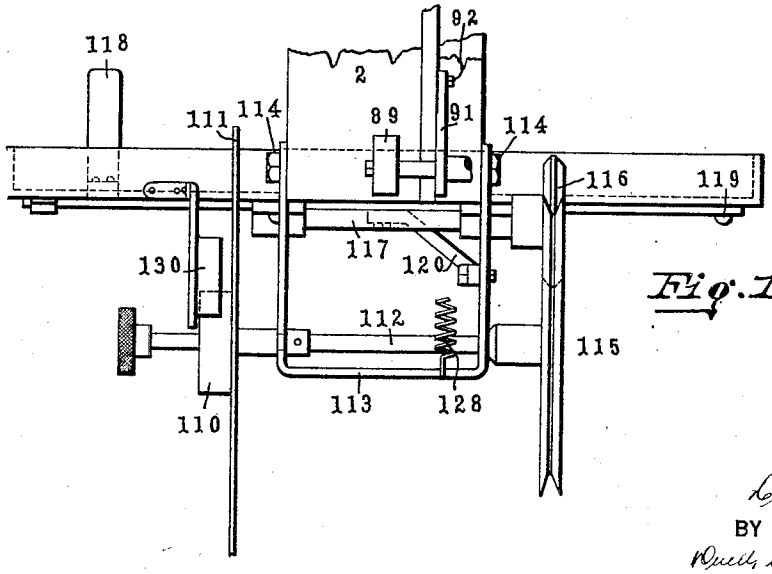


Fig. 17

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MACHINE FOR JOINING PAPER STRIPS

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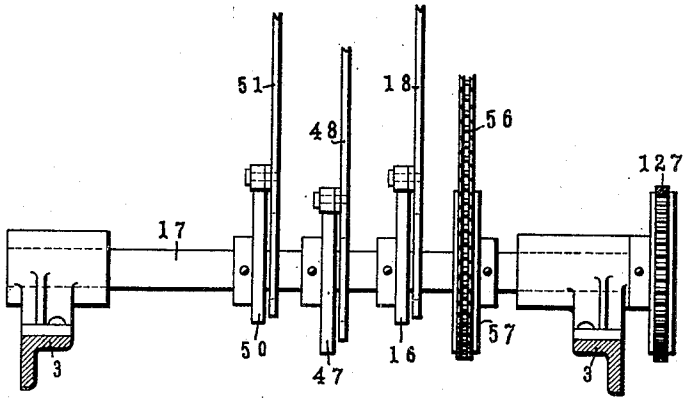


Fig. 19

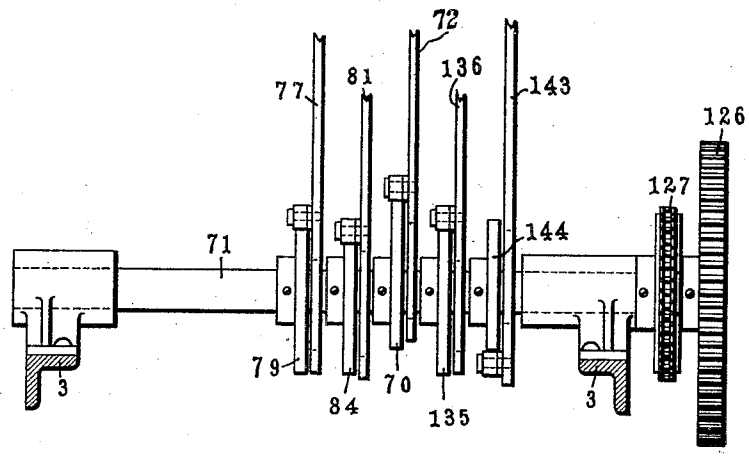


Fig. 20

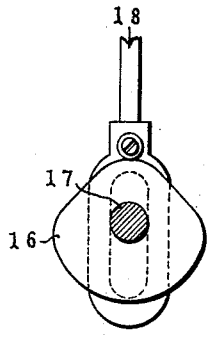


Fig. 21

Fig. 22

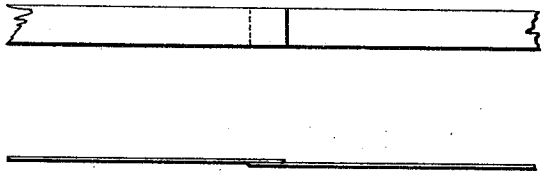


Fig. 23

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UNITED STATES PATENT OFFICE

HAROLD CARLE, OF BUFFALO, NEW YORK, ASSIGNOR TO F. N. BURT COMPANY, LIMITED, OF TORONTO, ONTARIO, CANADA, A CORPORATION OF ONTARIO, CANADA

MACHINE FOR JOINING PAPER STRIPS

Application filed March 19, 1923, Serial No. 625,944. Renewed December 12, 1928.

This invention relates to an improvement in a strip connecting machine and with respect to its more specific features to a machine for connecting a succession of strips into a continuous band suitable for covering boxes.

One of the objects of the invention is to provide an automatically controlled mechanism, for connecting a succession of independent strips of paper or the like into a connected band.

Another object is to provide a mechanism for successively removing independent strips from a pile of superposed strips, and attaching the advance end of each strip to the rear end of a preceding strip, thereby to aline the strips in end lapping relation.

Another object is to provide mechanism for spotting the rear end of the uppermost strip of the pile of superposed strips with glue prior to its removal, thereby to cause the adherence thereto of the advance end of the succeeding strip when it is lapped thereon.

Another object is to provide means for pressing the ends of the strips together after they have been lapped, to secure a close adhesion.

Another object is to provide means controlled to operation by the strip, for feeding the band, as the strips are attached, to properly position each attached strip for the attachment of the succeeding strip.

Another object is to provide means for advancing the band to properly position each strip as it is attached for the lapping of the succeeding strip, controlled to operate by the pressing of the strips together, and to release by the movement of the attached strip to position to have another lapped thereon.

Another object is to provide a normally operative brake for the band, controlled to release position by the means for advancing a strip from the pile.

Another object is to provide means for reeling up the connected band, operable at will, to permit setting of the glue connecting the strips before the band is reeled up.

Another object is to provide means for accurately centering the strips with respect to each other as they are attached, so that the side edges of the completed band will be straight lines.

Another object is to provide means for supporting a pile of superposed strips with the top strip thereof always at the same level.

Another object is to provide mechanism in connection with the supporting means for the strip, to maintain the topmost strip in a horizontal plane.

Other objects will be in part obvious and in part pointed out hereinafter.

The invention accordingly consists in the features of construction, combinations of elements and arrangement of parts which will be exemplified in the construction hereinafter set forth, and the scope of the application of which will be indicated in the following claims.

In the accompanying drawings forming a part of this specification wherein similar reference characters refer to similar parts throughout the several views,

Figure 1 is a front elevation of the improved machine,

Fig. 2 is a detail in front elevation of the adhesive applying means, with parts in section,

Fig. 3 is a detail in rear elevation of the adhesive applying mechanism,

Fig. 4 is an edge view of Fig. 3 with parts in section,

Fig. 5 is a detail in front elevation, showing the means for establishing the position of the topmost strip in the magazine,

Fig. 6 is a side view of the means for limiting the upward movement of the strip with parts in section,

Fig. 7 is a detail in front elevation of the equalizing mechanism for the magazine,

Fig. 8 is a detail of the cam mechanism, looking at right angles to Fig. 7,

Fig. 9 is an end view of the magazine and the guiding mechanism therefor,

Fig. 10 is a side view of the same,

Fig. 11 is a detail in front elevation of the strip advancing and strip superposing mechanism, with parts broken away,

Fig. 12 is a plan view of the same,

Fig. 13 is an end view of the said mechanism,

Fig. 14 is a plan view of the table,

Fig. 15 is a detail in rear elevation of the strip connecting mechanism,

Fig. 16 is an end view,

Fig. 17 is a detail in plan of the reeling mechanism,

Fig. 18 is a plan view of the operating mechanism,

Fig. 19 is a plan view of the cam shaft, controlling the preliminary feeding and the adhesive applying mechanism,

Fig. 20 is a similar view of the cam shaft controlling the attaching mechanism,

Fig. 21 is a detail in side elevation of one of the cams,

Fig. 22 is a plan view of a portion of the band, and

Fig. 23 is an edge view of the same.

In the present embodiment of the invention, a suitable framework 1 is provided, carrying upper and lower tables 2 and 3, the former supporting the mechanism for directly attaching the strips together to form a band, while the latter supports the operating mechanism therefor. A strip supply magazine is provided for supporting a pile of superposed strips which are to be connected end to end. The magazine comprises an angle plate 4, which is arranged with one of its portions horizontal, and the magazine has guided movement vertically on guide posts 5 which are connected to the table 2 by angle plates 6. Grooved rollers 7 are journaled on the magazine at each guide, and the rollers engage the guides as shown. Two guides and two rollers are provided, and the rollers are at the inner faces of the guides. The magazine is normally pressed upward depthwise of the pile of strips by a spring 26, which operates simultaneously on both ends of the magazine. The spring is arranged between bell cranks 22, which are pivoted at 23 to brackets depending from the table 2. One rock arm, the longer, of each bell crank is connected by a link 25 with the magazine 4, and the other arms of the bell cranks, the shorter arms, are connected by the spring 26, one of the bell cranks having an extension 27, so that the connection between the spring and the arms is on opposite sides of the pivotal connection 23 of the bell cranks. The spring acts normally to swing both bell cranks in a direction to move the magazine upward.

A staff 9 depends from the magazine table at the centre thereof, and passes through a bearing sleeve 10 below the table 2. This sleeve is normally drawn upward by a spring 8, arranged between the sleeve and the table 2, and its ultimate upper position is limited by a stop 11 depending from the table. Mechanism is provided in connection with the sleeve 10 for engaging the staff to normally hold the magazine from upward movement under influence of spring 26, and the mechanism is released at regular intervals; that is whenever a strip is removed from the magazine, to permit the magazine to move upward. Said mechanism comprises a cam 12, secured to shaft 15, journaled in bearings 13 on sleeve 10, transversely of the staff. Shaft 15 has radial arm 14 which is moved up and down through adjustable link 21, and bell crank 19 pivoted at 20 to a frame bracket. To one end of the bell crank is connected follower 18 which embraces the power actuated shaft 17, and has a friction roller cooperating with a cam 16 on shaft 17. When cam 17 causes arm 14 to rotate downwardly or counter clockwise, cam 12 is rotated to grip staff 9, whereupon both the sleeve and staff move down, as arm 14 further descends. This movement lowers the strips from the arm 35 and the fingers 75, (Figs. 2 and 11) hereinafter more specifically described. When arm 14 moves upwardly, or clockwise, the grip of cam 12 on staff 9 is relieved, permitting spring 26 to move the magazine upwardly, and its upward movement will cease when the pile of strips contacts said arm 35 and fingers 75. A spring 4^a is employed to assist clockwise rotation of the arm 14. Thus, once during each complete rotation of shaft 17, the staff 9 is gripped and released by the cam 12, and the magazine thereby caused to descend and rise.

The strips of paper to be attached end to end rest in superposed relation on the magazine. Gauge plates 28 are secured to the vertical portion of the angle plate forming the magazine at the guide posts 5, the gauge plates preventing forward movement of the pile of superposed strips. Movable gauge plates are arranged at the rear of the magazine, the said plates 29 which are of resilient material being secured to the posts 5 at their lower ends. A set screw 30 is threaded through the post near its top into engagement with the gauge plate, and by turning the screw the plate may be moved toward or from the adjacent fixed plate 28, to establish the position of the pile of superposed strips in the magazine. The screw 30 is held in adjusted position by a lock nut 31. The longitudinal position of the strips is established at the end adjacent to the adhesive applying mechanism by means of a gauge plate 32. The plate, which is of resilient material, is secured at its lower end, to a post 33 extending upwardly from the table 1, and the upper end of the plate is engaged by a set screw 34 threaded through the post, and having a lock nut as shown. By turning the screw in the proper direction, the upper end of the plate may be moved toward or from the magazine. The upward movement of the magazine under the influence of the spring 26 is limited by an overhanging arm 35, which is adjustably connected to an angle plate 36 secured to a superstructure 38 above the table 1, by a

screw and slot connection 37. This arm 35 extends across the strips in the magazine, and is engaged by the topmost strip, to limit the upward movement of the magazine.

The superstructure 38 supports an adhesive supply device, including a trough or pan 39. A roller 40 is journaled in the pan, and dips into the adhesive, and the film of adhesive on the roller 40 is determined by a doctor roll 41 journaled on the tank adjacent to the roller 40. A dauber or spotter is provided for applying adhesive to the rear end of the topmost strip in the magazine reciprocal movement. This dauber or gluer indicated at 42 is in the form of a plate, having its lower end shaped to apply a line of adhesive transversely to the strip, or a line of spots of adhesive as may be desired. The dauber is supported by a carriage 43 in laterally spaced relation, and the carriage is slidable in a guide 44 which extends transversely of a slide 45, having vertical movement in a guideway 46 supported by the superstructure 38. The parts are so arranged, that when the slide 45 is in the position of Fig. 2, and the carriage 43 is moved transversely of the slide in the guideway 44, the dauber will be moved past the roller 40, and will contact with the peripheral surface thereof, to take therefrom a film of adhesive, which is afterwards applied to the topmost strip in the magazine. The slide 45 is moved vertically by means of a cam 47 on the shaft 17 before mentioned. A follower 48 embraces the shaft at one end, and the other end is pivoted to the slide. The follower has a friction roller engaging the edge of the cam, and the follower and the slide are normally pulled downward by a spring 49 arranged between the slide and the table.

The carriage is moved in the guideway 44, by means of a cam 50 on the shaft 17. A follower 51 embraces the shaft, and the upper end of the follower is pivoted to one of the arms of a bell crank 52 pivoted at 53 to the table 1. The other arm of the bell crank is connected to the carriage by an expansible and contractible link 54, and the bell crank is normally urged in a direction to move the carriage 43 toward the magazine by a spring 55 arranged between the table and the bell crank.

The operation of the mechanism just described is as follows:

The magazine being provided with strips, and the pan 39 with adhesive, when the shaft 17 is rotated, the carriage 43 will be reciprocated to cause the dauber to contact with the peripheral surface of the roller 40, and to receive therefrom a film of adhesive, and to move into position above the adjacent end of the uppermost of the pile of strips in the magazine. When the dauber is in this position, the cam 47 operates to depress the slide 45, to cause the dauber to contact with the uppermost strip in the magazine, and to deposit thereon a spot or spots of adhesive. The strip supplied with adhesive, is then advanced a short distance, by mechanism to be later described, exposing the end of a succeeding strip for the application of the adhesive. The roller 40 is continuously rotated by a sprocket chain 56, which connects a sprocket wheel 57 on the shaft 17 with a sprocket 58 on the shaft of the roller 40, and the roller 40 is geared to the doctor roll 41, by gearing indicated at 59. Referring to Fig. 2, it will be noticed that the carriage 43 and the slide 45 are detachably held in the respective guideways by means of holding plates having screw connection with the guideways.

For directly attaching successive strips together a joining mechanism is employed. As the successive strips are supplied with adhesive and advanced slightly, each is positioned with its advance end lapped upon the rear end of the preceding strip, for attachment thereto to form a band. At the end remote from the adhesive applying means, which end for convenience may be described as the advance end, the strips abut against the stop plate 60, depending from a table 61 movable vertically with respect to the magazine. The stop plate 60 has a central vertical groove 62 on the face adjacent to the magazine, which receives a tongue 63^a on the upper end of a plate 64^a secured to the table 2. When a strip receives its preliminary advancement, it is automatically displaced longitudinally from those in the magazine, the advance end being lifted above the top of the stop plate 60, so that the said end may be lapped upon the upper face of the table 61. The mechanism for advancing the strip from the magazine into lapping relation with the rear end of the preceding strip is shown more particularly in Figs. 11 to 15 inclusive. The said mechanism comprises a suction head 63 which has suction ports, connected to a suitable exhausting apparatus indicated at 64 by a hose 65. The piston 640 of the exhausting apparatus, indicated in dotted lines in Fig. 15 is connected by a link 141 with one end of a lever 142 pivoted to the table 2 at the opposite end, and connected intermediate its ends with a follower 143 embracing the shaft 71, and having a friction roller cooperating with a cam 144 secured to the shaft. The head is supported by a carriage 66, in laterally spaced relation, and the carriage is mounted to move horizontally in a guideway 67. The guideway is secured transversely of the upper end of a slide 68, which has vertical movement in a guide 69 supported by the table 2. The slide 68 is reciprocated by a cam 70 on a shaft 71 journaled parallel with the shaft 17, at the opposite end of the table 3. A follower 72 embraces the shaft, and has a friction roll co-

operating with the edge of the cam, and the follower is connected to a lever 73 pivoted to the table 2 at one end, and connected at the other by a link 74 with the slide. The connection between the follower and the lever is an adjustable connection, as shown in Fig. 11, so that the stroke of the slide may be varied. The topmost strip when engaged and lifted by the suction head is separated from the other strips by means of separating fingers 75 on the table 61, the said fingers being in the form of spurs or lugs. Against and underneath these lugs the uppermost strip in the magazine may abut to assist in positioning the uppermost strip. The suction head moves upward, and then laterally to the right of Fig. 11, and at the same time the table 61 is moved downward, and the end of the strip held by the suction head is thereby advanced relative to and superposed on the glued end of the previously attached strip on table 61. The superposed ends of the strip are just beneath a presser head 76, and as soon as the strips are superposed, the presser head is moved downwardly to press them tightly together on the table. The head extends laterally from a bar 77, which is mounted to move vertically in a guide 78 on the frame, and the lower end of the bar is a follower which embraces a shaft 71 journaled on the table 3, parallel with the shaft 17 and at the opposite end of the table. The follower has a friction roll which cooperates with a cam 79 on the shaft, the cam moving the presser head downward, and it is moved upward by mechanism to be presently described. The bar 77 is sectional, as shown in Fig. 11 and the sections are normally held end to end by means of a spring 80 arranged between the sections. When the attached ends of the strip have been pressed together, the table 61 moves upward, the table being moved by means of a member or link 81, pivoted at its upper end to a slide 82 connected with the table, and movable in a guide 83 on the frame, and the lower end of the bar is a follower embracing the shaft 71, and having a friction roller cooperating with a cam 84 on the shaft. The roller is held in engagement with the cam by means of a spring 85 arranged between the carriage and the table 2. As the carriage 61 nears the end of its upward movement, a lever 86 which is pivoted to the slide 82 intermediate the ends of the lever, engages at one end a stop 87 on the frame, and at the other a pin 88 on the bar 77, and the presser head is moved upward to release the paper strip as the table is moving in the same direction. The provision of the spring 80 permits the pressing to be applied yieldingly and prevents injury to the parts, in case there should be an obstruction between the presser and the table. The carriage 66 is moved horizontally in the guideway 67, by means of a cam 135 on the shaft 71. A follower 136 embracing the shaft, has a friction roller engaging the edge of the cam, and the upper end of the follower is pivoted to one of the arms of a bell crank 137 pivoted at 138 to a bracket plate 139 extending upwardly from the table 2. The connection between the link 136 and the bell crank is an adjustable connection, as shown in Fig. 15, and the arm of the bell crank remote from the link 136 is connected to the carriage 66 by a link 140. Thus the suction head has horizontal and vertical movement. From the position of Fig. 11 it is first depressed, and afterwards moved slightly rearwardly, then lifted and moved forwardly.

As the carriage reaches the end of its upward movement, feeding mechanism for the band is actuated, to feed the band, to draw the strip just attached away from the pile of superposed strips, and to position the rear glued end thereof for receiving the succeeding strip.

The feeding mechanism includes a pair of feed rolls 89 and 90, the latter being journaled in the frame, while the former is supported by arms 91 pivoted to the frame as indicated at 92. This mounting permits the roller 89 to move toward and from the roller 90, to grasp and release the band. The rollers 89 and 90 are geared together by gear wheels 93 and 94 on the respective shafts, and the gear wheel 94 is driven by a gear wheel 95 on a shaft 96 journaled in the framework, and driven by a belt 97 from a shaft to be presently described. The roller 90 is driven continuously, and it continuously drives the roller 89. The roller 89 normally contacts, or substantially so, with the roller 90, so that a strip of paper between the rollers will be fed. Feed control mechanism is provided for lifting the roller 89 slightly, to release the band, and thereby arrest feed of the strip by the feeding mechanism during the joining operation, the roller, however, being lifted only high enough to release the band, and not to disengage the gears 93 and 94. The said mechanism comprises a lever 98, pivoted at 99 to the frame, and having an upstanding arm 100 at the end remote from the suction head, which is provided with a friction roller engaging a head 101 held on the sleeve 89^a in which the shaft of the roller is journaled. That end of the lever 98 adjacent to the head 101 is normally stressed by a spring 102 arranged between the head and the adjacent end of the lever, and the opposite end of the lever is provided with a depending feed roll controlling pin 103, adjustably connected with the lever. The lower end of the pin is adapted to engage the strip of paper on the table 61, and to be upheld by the strip of paper. When so held the lever 98 is positioned so that it does not interfere with

the operation of the rollers 89 and 90. When no paper is on the table the pin may drop across the path of the strip, the opposite end of the lever thus rising and lifting the roller 89 enough to release the grip on the paper. The table 61 has an opening 104 for receiving the end of the pin when it drops. As soon as the rear end of the attached strip of paper is drawn past the pin 103, the pin drops, and the roller 89 is lifted, to release the grip on the paper, thereby to stop the further feeding of the band. The downward movement of the pin 103 is limited by a stop 105 on the frame, which engages the lever 98. The release takes place, just as the rear end of the strip is passing beneath the presser head 76. Mechanism is provided for braking the movement of the band, so that the rear end thereof will stop at the presser head.

The braking mechanism includes a brake shoe 106 pivoted at 107 to the table 61 and having its free end extending toward the suction head, and resting on the upper face of the paper band on the table. When the suction head moves toward the table 61, it lifts the brake shoe. The suction head has a cam flange 108 at one end which engages an arm 109 on the brake shoe, to lift the shoe when the head moves toward the feed rollers 89 and 90. The completed band is wound on a reel consisting of a hub 110, and a flange constituted by a disc 111. The reel is secured to a shaft 112 journaled in a substantially U shaped swinging frame 113 pivoted to the end of the table 2, as indicated at 114. At the end remote from the reel the shaft carries a peripherally grooved friction disc 115, which is adapted for engagement with a friction wheel 116 on a shaft 117 journaled on the frame 1, parallel with the shaft 112. The frame 113 is swung down to engage the friction wheels 115 and 116, thereby to drive the reel when desired, by means of a treadle 118 pivoted at 119, to the frame 1, and connected to the swinging frame 113 by means of a link 120. The frame is moved upward by a spring 128 arranged between the swinging frame and the frame of the machine. When it is desired to reel up the band, the treadle is depressed, to connect the wheels 115 and 116. Slack is provided in the band, between the reel and the feed rollers, as indicated at 129 in Fig. 1, in order that the glue may set before the band is wound on the reel. The reel is tensioned by means of a shoe 130 which rests upon the wound band. The shoe is on one end of a lever 131 pivoted to the frame, and the shoe is pressed toward the reel by means of a spring 132. The link 120 is extensible and contractible having a turn buckle interposed in its length, and the shaft 117 is driven by a belt 121 from the shaft of a motor indicated at 122 mounted on the table 3.

The shaft of the motor 122 is connected by a second belt 123 with a shaft 124 journaled adjacent to the shaft 71. The pulley and belt connection 97 before mentioned connects the shaft 96 with the shaft 124. The shaft 124 drives the shaft 71, through gearing indicated at 126, and the shaft 71 drives the shaft 17, being connected thereto by a sprocket chain connection 127. In order to prevent lifting of the strip with the pin 103 or with the presser head in case the pin or head should become covered or partially covered with adhesive, a stop 133 is arranged above the table 61, between the pin and the suction head. The stop prevents upward lifting of the band by the head or pin.

The operation of the improved machine is as follows—

The magazine is supplied with superposed strips of paper of suitable length, the magazine being moved downward to receive the strips. The cam 12 is first released and the magazine is depressed, and may be held in depressed position by means of a catch 134 pivoted to the table 2, and adapted to engage above the magazine, as shown in Fig. 7. The pan is supplied with adhesive, and the machine is ready for operation. When the motor is started, the dauber is moved over the glue roll and then down upon the adjacent end of the uppermost strip in the magazine, and the said end is spotted with adhesive. Immediately thereafter the suction head engages the opposite end of the topmost strip, and moves upward and to the right with the said end. The first strip fed, may be moved into the grip of the feed rollers 89 and 90 manually, and the said rollers by means of the treadle may be operated to properly position this strip with its rear glued end beneath the presser head. The movement of the suction head upwardly and to the right of Fig. 11 properly positions the forward end of the second strip on the rear end of the advance strip, the table 61 being in lowered position at this time, and the brake shoe being lifted by the suction head. The presser head is immediately depressed, and the ends of the strips are pressed tightly together. The table 61 is now lifted, with the presser head in contact therewith, and as it reaches the end of its upward movement, the presser head is lifted by the lever 86. As the table moves upward, the band of paper on the table lifts the pin 103, the rollers 89 and 90 grasp the band and begin to feed the same. The band is fed until the rear end thereof passes from beneath the pin 103, which immediately drops, lifting the roll 89, and releasing the grasp of the roller on the band. The brake shoe checks the movement of the band, so that the rear end thereof is positioned exactly beneath the presser head, and in position to have superposed thereon the advance end of a succeeding strip. As the band is fed away from the machine by the feed rollers, it falls into a

loop 129. When a sufficient time has elapsed for the setting of the glue, the treadle 118 is operated to connect the wheels 115 and 116 and a portion of the slack is wound up on the reel. The shoe 130 prevents reverse movement of the reel under the weight of the slack strip.

When the table 61 moves downward, after the joining of the strip the feeding of the band is stopped, by the downward movement of the pin 103. The movement of the lever 98 is just sufficient to stop the feed of the band, the further movement of the lever being arrested by the pin 105. When the end of the advancing strip is superposed on the rear end of the preceding strip the table is in lowered position, far enough below the bottom of the pin 103, so that the strip may move into joining position, without interference from the pin. When the table moves upward, and at the end of its upward movement the pin is lifted to swing the lever 98, to cause the feed rollers to operate to feed the band. Should there be a failure to advance a strip for any reason, and the table move upward, the lower end of the pin passes into the opening 104, and the feed is not operated. A succeeding strip must be in joining position before the band feeding mechanism will be operated.

As many changes could be made in the above construction and many apparently widely different embodiments of this invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the language used in the following claims is intended to cover all of the generic and specific features of the invention herein described, and all statements of the scope of the invention, which, as a matter of language, might be said to fall therebetween.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:—

1. In a machine of the class described, in combination, means for applying adhesive to one end of each of a series of superposed strips, means for advancing the strips in succession from the adhesive applying means to expose the end of the succeeding strip, means for attaching the advance end of each strip to the rear end of the preceding strip to form a band, and means controlled to operate by the movement of the band for feeding the band away from the adhesive applying means after the attachment of each strip.

2. In a machine of the class described, in combination, means for applying adhesive to one end of each of a series of superposed strips, means for advancing the strips in succession from the adhesive applying means to expose the end of the succeeding strip, means for attaching the advance end of each strip to the rear end of the preceding strip to form a band, means controlled to operate by the movement of the band for feeding the band away from the adhesive applying means after the attachment of each strip, and means operable at will for reeling up the band.

3. In a machine of the class described, in combination, a table for supporting a pile of superposed strips of paper or the like, means for removing the strips in succession, normally active means for pressing the table upward, a lock for the table released when a strip is removed to permit the table to move upward to maintain the topmost strip at the same level, and a stop with which the pile is adapted to contact for limiting the upward movement of the table.

4. In a machine of the class described, in combination, a magazine table for supporting a pile of superposed strips of paper or the like, said table being mounted for movement in opposite directions depthwise of said pile, means for removing strips successively from said pile, and means adapted to move said magazine table depthwise of said pile, including levers mounted on the frame of the machine, links connecting said levers to said table, a rod joining said levers for movement in unison, a spring operatively connecting said levers adapted to move said table in one direction and a power actuated device for moving said table at intervals in a direction opposed to that effected by said spring.

5. In a machine of the class described, in combination, a magazine table for supporting a pile of superposed strips of paper or the like, said table being mounted for movement in opposite directions depthwise of said pile, means for removing strips successively from said pile, and means adapted to move said magazine table depthwise of said pile, including levers mounted on the frame of the machine, links connecting said levers to said table, a rod joining said levers for movement in unison, a spring operatively connecting said levers adapted to move said table in one direction and a power actuated device for moving said table at intervals in a direction opposed to that effected by said spring, said device including a staff connected to said table, a sleeve reciprocal on said staff, and a cam oscillatable on said sleeve power actuated to grip and release said staff.

6. In a machine of the class described, in combination, an adhesive applying device, comprising a glue supplying roll, a dauber, means for moving the dauber horizontally to contact with the roll, means for moving the dauber vertically to apply the glue, a support for a pile of superposed strips of paper or the

like, in the path of movement of the dauber, and means for attaching the glued ends of the strips together to form a continuous web.

7. In a machine of the class described, in combiantion, an adhesive applying device, comprising a glue supplying roll, a dauber, means for moving the dauber horizontally to contact with the roll, means for moving the dauber vertically to apply the glue, a support for a pile of superposed strips of paper or the like, in the path of movement of the dauber, means for attaching the glued ends of the strips, and means operable at will for reeling up the connected strips.

8. In a machine of the class described, in combiantion, a table for supporting the glued end of a strip of paper or the like, means to lap a second strip upon the glued end, a presser for cooperating with the table to clamp the ends together, and means to lower and lift the table to permit the lapping of the second strip and the subsequent pressing of the lapped ends against the presser.

9. In a machine of the class described, in combination, a table for supporting the glued end of a strip of paper or the like, means to lap a second strip upon the glued end, a presser for cooperating with the table to clamp the ends together, means to lower and lift the table to permit the lapping of the second strip and the subsequent pressing of the lapped ends against the presser, and a yielding mounting for the presser.

10. In a machine of the class described, in combination, a table for supporting the glued end of a strip of paper or the like, means to lap a second strip upon the glued end, a presser for cooperating with the table to clamp the ends together, means to lower and lift the table to permit the lapping of the second strip and the subsequent pressing of the lapped ends against the presser, and means controlled by the movement of the table toward the presser for lifting the presser to release the strips.

11. In a machine of the class described, in combiantion, a table for supporting the glued end of a strip of paper or the like, means to lap a second strip upon the glued end, a presser for cooperating with the table to clamp the ends together, means to lower and lift the table to permit the lapping of the second strip and the subsequent pressing of the lapped ends against the presser, means controlled by the movement of the table toward the presser for lifting the presser to release the strips, and a yielding mounting for the presser.

12. In a machine of the class described, in combination, a table for supporting the glued end of a strip of paper or the like, means to lap a second strip upon the glued end, a presser for cooperating with the table to clamp the ends together, means to lower and lift the table to permit the lapping of the second strip and the subsequent pressing of the lapped ends against the presser, means for removing the connected strips, and means controlled by the movement of the strips for controlling the removing means.

13. In a machine of the class described, in combination, a table for supporting the glued end of a strip of paper or the like, means to lap a second strip upon the glued end, a presser for cooperating with the table to clamp the ends together, means to lower and lift the table to permit the lapping of the second strip and the subsequent pressing of the lapped ends against the presser, means for removing the connected strips, means controlled by the movement of the strips for controlling the removing means, and means operable at will for reeling up the connected strips.

14. In a machine of the class described, in combination, a table, a presser cooperating therewith, means for feeding a strip between the table and the presser, means to lower the table to permit the insertion of the strip, and to afterwards raise the table, a magazine for holding the strips in superposed relation, and means between the table and magazine for separating the topmost strip from the pile.

15. In a machine of the class described, in combination, a table, a presser cooperating therewith, means for feeding a strip between the table and the presser, means to lower the table to permit the insertion of the strip, and to afterwards raise the table, and means to move the band from the table controlled to operation by upward movement of the table, and to inoperative position by the movement of the band beyond a selected point upon the table.

16. In a machine of the class described, in combination, a table, a presser cooperating therewith, means for feeding a strip between the table and the presser, means to lower the table to permit the insertion of the strip, and to afterwards raise the table, means to move the band from the table controlled to operation by upward movement of the table, and to inoperative position by the movement of the band beyond a selected point upon the table, and means operable at will for reeling up the band.

17. In a machine of the class described, in combination, means for attaching successive strips end to end to form a band, and means for feeding the band from the machine controlled by the band to operative and inoperative position.

18. In a machine of the class described, in combination, means for attaching successive strips end to end to form a band, means for feeding the band from the machine controlled by the band to operative and inoperative position, and a brake to prevent over feeding of the strip.

19. In a machine of the class described, in combination, means for attaching successive strips end to end to form a band, means for feeding the band from the machine controlled by the band to operative and inoperative position, a brake to prevent over feeding of the strip, and means operable at will for reeling up the band.

20. In a machine of the class described, in combination, means for advancing successive strips of paper or the like from a pile of superposed strips, comprising gripping means, means to impart vertical and horizontal movement to said means first to lift and afterwards to advance the strips, and means adapted to separate the top strip from the remining strips prior to said horizontal movement.

21. In a machine of the class described, in combination, a vertically reciprocal strip magazine table, a vertically reciprocal slide, a presser table and presser head each vertically reciprocal, a suction head horizontally reciprocal on said slide opposite said presser table and one end of said magazine table, a strip gluer adjacent to the other end of said magazine table, and means adapted to coordinate the operations of said magazine table, slide, presser table, presser head, suction head and gluer so as to cause glued strips to be removed in succession from said magazine table to said presser table and assembled and pressed in overlapping relation on said presser table and thereafter removed from said presser table.

22. In a machine of the class described, in combination, a magazine for holding strips of paper or the like, and means to feed the strips from the magazine, including mechanism for gripping the strip and moving it lengthwise, and a control device for the gripping mechanism operated by pressure exerted on said device by the surface of the strip.

23. In a machine of the class described, in combination, a pair of continuously rotating separable rollers adapted to clutch a strip therebetween, and a member operable to reduce the separation of said rollers by pressure exerted against said member by the surface of the strip.

24. In a machine of the class described, in combination, a magazine for holding strips of paper or the like, a press, and means to feed the strips from the magazine and adapted to position the rearward end of one of the strips at said press, said means including a pair of continuously rotating separable rollers adapted to clutch the strip therebetween, and a member operable to reduce the separation of said roller by pressure exerted against the member by the surface of the strip.

25. In a machine of the class described, in combination, a magazine for holding strips of paper or the like, a press, means for applying adhesive to an end of each strip, and means to feed the strips from the magazine and adapted to position the adhesive covered end at the press, said means including a pair of continuously rotating separable rollers adapted to clutch the strip therebetween, and a member operable to reduce the separation of said rollers by pressure exerted against said member by the surface of the strip.

26. In a machine of the class described, in combination, a magazine supporting a plurality of extended strips of paper or the like in superposed relation, means to feed the said strips from the magazine, means to maintain the uppermost strip in the magazine at a constant elevation, and means cooperating with the feeding means to unite the strips end to end.

27. In a machine of the class described, in combination, a magazine supporting a pluraility of extended strips of paper or the like in superposed relation, means to feed the said strips from the magazine, means to maintain the uppermost strip in the magazine at a constant elevation, means cooperating with the feeding means to unite the strips end to end, including an adhesive applying means, and means to lap the ends of the strip on each other.

28. In a machine of the class described, in combination, a magazine supporting a plurality of extended strips of paper or the like in superposed relation, means to feed the said strips from the magazine, means to maintain the uppermost strip in the magazine at a constant elevation, means cooperating with the feeding means to unite the strips end to end, including an adhesive applying means, means to lap the ends of the strip on each other, and a press adapted to act on the lapped ends of the strips.

29. In a machine of the class described, in combination, a magazine for holding strips of paper or the like, means to feed the strips from the magazine, means to unite strips end to end, and means adapted to cause a successive strip to assume the position of the preceding strip within the machine upon the removal of the preceding strip from the magazine.

30. In a machine of the class described, in combination, a press adapted to act on the lapped ends of strips of paper or the like, means to place an end of one such strip at the press, means to place the end of another strip in lapped relation with the end of the first strip, means to actuate the press, and means to remove the united strips from the press.

31. In a machine of the class described, in combination, a press adapted to act on the lapped ends of strips of paper or the like, means normally adapted to feed the strips through said press, means automatically operable to stop said feeding means when a strip is at the press, and means to place the

end of another strip in lapped relation to the end of the first strip.

32. In a machine of the class described, in combination, a press adapted to act on the lapped ends of strips of paper or the like, a feed mechanism, controlling means for the feeding mechanism and itself controlled by the strip being fed, whereby said mechanism ceases to operate when the end of the strip being fed is at the press, and means adapted to place the end of another strip in lapped relation with such end of the first strip.

33. In a machine of the class described, in combination, a press adapted to act on the lapped ends of strips of paper or the like, a feed mechanism, controlling means for the feeding mechanism and itself controlled by the strip being fed, whereby said mechanism ceases to operate when the end of the strip being fed is at the press, and means adapted to place the end of another strip in lapped relation with such end of the first strip, the controlling means including a member held in operative position by the surface of the strip.

34. In a machine of the class described, in combination, a magazine for holding a plurality of strips of paper or the like, means for feeding the strips, means to join the strips, and means automatically operative to stop the strip feed while the strips are being joined, and adapted to start the strip feed after the strips have been joined.

35. In a machine of the class described, in combination, a magazine for holding strips of paper or the like, a device adapted to feed the strips from the magazine, an auxiliary feeding device adapted to operate on such strips after partial removal from said magazine, means to control the auxiliary feeding device and adapted to cause the ends of two successive strips to overlap, and means to join the overlapped ends.

36. In a machine of the class described, in combination, a magazine for holding strips of paper or the like, means to feed the strips from the magazine, means automatically operable to join the strips to form a continuous band, said last mentioned means comprising an auxiliary feeding means adapted to advance one strip with respect to another and to superpose the end of one strip on the end of another strip, a gluer to apply adhesive to the end of one strip, and a press to squeeze the superposed end together.

37. In a machine of the class described, in combination, a magazine for holding strips of paper or the like, means to feed the strips from the magazine, means automatically operable to join the strips to form a continuous band, said last mentioned means comprising an auxiliary feeding means adapted to advance one strip with respect to another and to superpose the end of one strip on the end of another strip, and a gluer to apply adhesive to the end of one strip.

38. In a machine of the class described, in combination, a magazine for holding strips of paper or the like, means to feed the strips from the magazine, and means automatically operable to join the strips to form a continuous band, said last mentioned means comprising an auxiliary feeding means adapted to advance one strip with respect to another and to superpose the end of one strip on the end of another strip.

39. In a machine of the class described, in combination, strip feeding mechanism, strip joining mechanism, and means adapted to coordinate the operation of said mechanisms to assemble strips in overlapping relation, the joining mechanism including a device for effecting relative movement between the successive strips to bring one strip into overlapping relation to the other.

40. In a machine of the class described, in combination, strip feeding mechanism, strip joining mechanism, means adapted to coordinate the operation of said mechanisms to assemble strips in overlapping relation, the joining mechanism including a device for effecting relative movement between the successive strips to bring one strip into overlapping relation to the other, and a gluer to apply glue to one strip to adhesively attach the overlapped ends together.

41. In a machine of the class described, in combination, strip feeding mechanism, strip joining mechanism, and means adapted to coordinate the operation of said mechanisms to assemble strips in overlapping relation, the joining mechanism including a reciprocal strip advancing device for effecting relative movement between the successive strips to bring one strip into overlapping relation to the other.

42. In a machine of the class described, in combination, strip feeding mechanism, strip joining mechanism, and means adapted to coordinate the operation of said mechanisms to assemble strips in overlapping relation, the joining mechanism including a reciprocal strip advancing suction head for effecting relative movement between the successive strips to bring one strip into overlapping relation to the other.

43. In a machine of the class described, in combination, strip feeding mechanism, strip joining mechanism, means adapted to coordinate the operation of said mechanisms to assemble strips in overlapping relation, and means adapted to arrest the feed of the strip material by said feeding mechanism during the joining operation.

44. In a machine of the class described, in combination, strip feeding mechanism, strip joining mechanism, means adapted to coordinate the operation of said mechanisms to assemble strips in overlapping relation, the

joining mechanism including a device for effecting relative movement between the successive strips to bring one strip into overlapping relation to the other, and means adapted to arrest the feed of the strip by said feeding mechanism during the joining operation.

45. In a machine of the class described, in combination, strip feeding mechanism, strip joining mechanism, means adapted to coordinate the operation of said mechanisms to assemble strips in overlapping relation, the joining mechanism including a device for effecting relative movement between the successive strips to bring one strip into overlapping relation to the other, and means adapted to arrest the feed of the strip by said feeding mechanism during the joining operation, said last named means including a feeding mechanism controller adapted to be held by the strip from arresting the feed thereof by said feeding mechanism.

46. A machine for attaching strips together to form a band including, in combination, a strip supply device, and means adapted automatically to take strips from said supply device and adhesively attach a plurality of said strips together with the advance end of each succeeding strip lapping the rear end of the preceding strip so as to form a band of strips, said means including a presser for pressing the lapped ends of the strips together, and mechanism for drawing the attached strips at intervals from said presser.

47. A machine for attaching strips together to form a band including, in combination, a strip supply device, and means adapted automatically to take strips from said supply device and adhesively attach a plurality of said strips together with the advance end of each succeeding strip lapping the rear end of the preceding strip so as to form a band of strips, said means including a presser for pressing the lapped ends of the strips together, mechanism for drawing the attached strips at intervals from said presser, and a device for advancing strips successively from said strip supply device into lapping relation with the rear end of the preceding strip in operative position relative to said presser.

48. A machine for attaching strips together to form a band including, in combination, a strip magazine, and means including a movable suction head adapted automatically to displace said strips longitudinally from their arrangement in the magazine and adhesively attach said strips together with the advance end of each succeeding strip lapping the rear end of the preceding strip.

49. A machine for attaching strips together to form a band including, in combination, a strip magazine, means adapted automatically to displace said strips longitudinally from their arrangement in the magazine and adhesively attach said strips together with the advance end of each succeeding strip lapping the rear end of the preceding strip, said means including a presser for pressing the lapped ends together, mechanism for drawing the attached strips from said presser, and a device for advancing strips successively from said magazine into lapping relation with the rear end of a preceding strip in operative position relative to said presser.

50. A machine for attaching strips together to form a band including, in combination, a strip magazine, means adapted automatically to displace said strips longitudinally from their arrangement in the magazine and adhesively attach said strips together with the advance end of each succeeding strip lapping the rear end of the preceding strip, said means including a dauber adapted to apply adhesive to the rear end of each strip in the magazine, a presser for pressing the lapped ends together, mechanism for drawing the attached strips from said presser, and a device for advancing strips successively from said magazine into lapping relation with the rear adhesive coated end of a preceding strip in operative position relative to said presser.

51. A machine for attaching strips together to form a band including, in combination, a strip magazine movable in opposite directions depthwise of the pile of strips therein, a dauber reciprocally movable toward and from the top of the pile to apply adhesive to each strip, a presser head and its coacting table reciprocal relative to each other and each reciprocal depthwise relative to said pile, and a suction head reciprocal toward and from the pile and toward and from said table adapted to advance strips successively from the magazine to said table.

52. A machine for attaching strips together to form a band including, in combination, a strip magazine movable in opposite directions depthwise of the pile of strips therein, a dauber reciprocally movable toward and from the top of the pile to apply adhesive to each strip, a presser head and its coacting table reciprocal relative to each other and each reciprocal depthwise relative to said pile, a suction head reciprocal toward and from the pile and toward and from said table adapted to advance strips successively from the magazine to said table, a pair of continuously driven feed rolls between which the attached strips pass, and means adapted to cause said rolls to grip and to release said strip including a reciprocal feed-roll-separating strip-controlled pin movable toward said table to effect release of said grip, and means adapted to arrest the last mentioned movement of said pin.

53. A machine for attaching strips together to form a band including, in combination, a strip magazine movable in opposite directions depthwise of the pile of strips

therein, a dauber reciprocally movable toward and from the top of the pile to apply adhesive to each strip, a presser head and its coacting table reciprocal relative to each other and each reciprocal depthwise relative to said pile, a suction head reciprocal toward and from the pile and toward and from said table adapted to advance strips successively from the magazine to said table, a pair of continuously driven feed rolls between which the attached strips pass, and means adapted to cause said rolls to grip and to release said strip including a reciprocal feed-roll-separating strip-controlled pin movable toward said table to effect release of said grip, means adapted to arrest the last mentioned movement of said pin, said table being movable in its reciprocal path to a position out of contact with said pin.

54. A machine for attaching strips together to form a band including, in combination, a strip magazine movable in opposite directions depthwise of the pile of strips therein, a dauber reciprocally movable toward and from the top of the pile to apply adhesive to each strip, a presser head and its coacting table reciprocal relative to each other and each reciprocal depthwise relative to said pile, a suction head reciprocal toward and from the pile and toward and from said table adapted to advance strips successively from the magazine to said table, a pair of feed rolls for feeding the attached strips, and a brake member adapted to cooperate with said table to check advance movement of the attached strips, and means actuated by movement of said suction head for operating said brake member.

55. A machine of the character described including, in combination, a strip magazine movable depthwise of the pile of strips therein, a stationary frame, rock arms supported by said frame, links joining said arms to the ends of said magazine, guides for said magazine, a spring operatively connected to said arms and tending to rock them in directions to lift said magazine, and means to restrain lifting of the magazine by said spring including a reciprocal sleeve, a staff movable with said magazine and guided in said sleeve, a cam rotatable on said sleeve to lock and unlock the same to said staff and power actuated means for operating said cam to lock and unlock said sleeve and staff at intervals.

56. A machine for attaching strips together to form a band including, in combination, a strip magazine, means adapted automatically to displace said strips longitudinally from their arrangement in the magazine and adhesively attach said strips together with the advance end of each succeeding strip lapping the rear end of the preceding strip, said means including a dauber adapted to apply adhesive to the rear end of each strip in the magazine, a presser for pressing the lapped ends together, mechanism for drawing the attached strips from said presser, and a device for advancing strips successively from said magazine into lapping relation with the rear adhesive coated end of a preceding strip in operative position relative to said presser, said magazine being guided and reciprocally movable in a plane transverse to the plane of the strips in the magazine, a pair of rock arms linked to the magazine, a spring operatively connected to said arms and tending simultaneously to move said arms in directions to move said magazine in one direction.

57. A machine for attaching strips together to form a band including, in combination, a strip magazine, means adapted automatically to displace said strips longitudinally from their arrangement in the magazine and adhesively attach said strips together with the advance end of each succeeding strip lapping the rear end of the preceding strip, said means including a dauber adapted to apply adhesive to the rear end of each strip in the magazine, a presser for pressing the lapped ends together, mechanism for drawing the attached strips from said presser, and a device for advancing strips successively from said magazine into lapping relation with the rear adhesive coated end of a preceding strip in operative position relative to said presser, said magazine being guided and reciprocally movable in a plane transverse to the plane of the strips in the magazine, a pair of rock arms linked to the magazine, a spring operatively connected to said arms and tending simultaneously to move said arms in directions to move said magazine in one direction, and means adapted at intervals to move said magazine in the opposite direction including a reciprocal sleeve, a staff connected to said magazine and guided on said sleeve, a cam with which said sleeve is movable and on which it is oscillatable to unlock the sleeve and staff, and means including power actuated mechanism for oscillating and reciprocating said cam relative to said staff.

58. A machine for joining strips together to form a band including, in combination, a magazine adapted to support a pile of strips a table for supporting the parts of the strips to be joined, a presser head adapted to cooperate with said table to press said strips for joining them, and means including a reciprocal strip advancing device adapted to feed the strips to be joined from the magazine and into overlapping relation to each other on said table.

59. A machine for joining strips together to form a band including, in combination, a table for supporting the parts of the strips to be joined, a presser head adapted to cooperate with said table to press said strips for joining them, and means adapted to feed

the strips to be joined into overlapping relation to each other on said table, a magazine adapted to support a pile of strips, a spring operatively connected to move said magazine transversely alongside said table, power actuated means for effecting said movement of the magazine at regular intervals, said strip feeding means including a strip advancing suction head operatively reciprocal from the top of the pile to position for laying the end of a strip in pressing position on said table.

60. A machine for joining strips together to form a band including, in combination, a table for supporting the parts of the strips to be joined, a presser head adapted to cooperate with said table to press said strips for joining them, means adapted to feed the strips to be joined into overlapping relation to each other on said table, a magazine adapted to support a pile of strips alongside said table, an adhesive supply device, a dauber operatively reciprocal from said adhesive supply device to the top of one end of said pile, said strip feeding means including a strip advancing suction head operatively reciprocal from the top of said pile to position for laying the end of a strip in pressing position on said table, and means for moving the magazine to bring successive strips therein into the sphere of action of said dauber and suction head.

61. A machine for joining strips together to form a band including, in combination, a table for supporting the parts of the strips to be joined, a presser head adapted to cooperate with said table to press said strips for joining them, and means adapted to feed the strips to be joined into overlapping relation to each other on said table, power actuated means and connecting members therefrom for reciprocating said table and said presser head transversely of the path of the strips, a stop, a lever reciprocal with one of said members to and from said stop, and means on the head connecting member adapted to cooperate with said lever to space said presser head from said table on movement of said table and presser head in the same direction.

62. A machine for joining strips together to form a band including, in combination, a table for supporting the parts of the strips to be joined, a presser head adapted to cooperate with said tables to press said strips for joining them, means adapted to feed the strips to be joined into overlapping relation to each other on said table, and means adapted to move said table and said presser head in opposite directions transversely of the path of the strips and toward and from each other.

63. A machine for joining strips together to form a band including, in combination, a table for supporting the parts of the strips to be joined, a presser head adapted to cooperate with said table to press said strips for joining them, means adapted to feed the strips to be joined into overlapping relation to each other on said table, means adapted to move said table and said presser head in opposite directions transversely of the path of the strips and toward and from each other, and a strip brake movable with and toward and from said table.

64. A machine for joining strips together to form a band including, in combination, a table for supporting the parts of the strips to be joined, a presser head adapted to cooperate with said table to press said strips for joining them, means adapted to feed the strips to be joined into overlapping relation to each other on said table, means adapted to move said table and said presser head in opposite directions transversely of the path of the strips and toward and from each other, and a strip brake movable with an toward and from said table, said feeding means including a strip advancing head, and means on said brake and said advancing head adapted to cooperate to apply and release said brake by movement of said advancing head.

65. A machine for joining strips together to form a band including, in combination, a table for supporting the parts of the strips to be joined, a presser head adapted to cooperate with said table to press said strips for joining them, means adapted to feed the strips to be joined into overlapping relation to each other on said table, means adapted to move said table and said presser head in opposite directions transversely of the path of the strips and toward and from each other, said strip feeding means including a pair of band feeding rolls movable toward and from each other, and means coupling said rolls for continuous rotary movement when apart.

66. A machine for joining strips together to form a band including, in combination, a table for supporting the parts of the strips to be joined, a presser head adapted to cooperate with said table to press said strips for joining them, means adapted to feed the strips to be joined into overlapping relation to each other on said table, means adapted to move said table and said presser head in opposite directions transversely of the path of the strips and toward and from each other, said strip feeding means including a pair of band feeding rolls movable toward and from each other, and means coupling said rolls for continuous rotary movement when apart, a lever, one arm of which has a feed roll controlling pin adapted to lie on the strip and move toward and from said table and across the path of the strip at the side of said presser head opposite that of the feed rolls, and means whereby reciprocal movement of said lever is adapted to cause said feed rolls to move toward and from each other.

67. A machine for joining strips together to form a band including, in combination, a table for supporting the parts of the strips to

be joined, a presser head adapted to cooperate with said table to press said strips for joining them, means adapted to feed the strips to be joined into overlapping relation to each other on said table, means adapted to move said table and said presser head in opposite directions transversely of the path of the strips and toward and from each other, said strip feeding means including a pair of band feeding rolls movable toward and from each other, means coupling said rolls for continuous rotary movement when apart, a lever, one arm of which has a feed roll controlling pin adapted to lie on the strip and move toward and from said table and across the path of the strip at the side of said presser head opposite that of the feed rolls, and means whereby reciprocal movement of said lever is adapted to cause said feed rolls to move toward and from each other, said table having an opening underlying the path of the strip in line with said pin.

68. A machine for joining strips together to form a band including, in combination, a table for supporting the parts of the strips to be joined, a presser head adapted to cooperate with said table to press said strips for joining them, means adapted to feed the strips to be joined into overlapping relation to each other on said table, means adapted to move said table and said presser head in opposite directions transversely of the path of the strips and toward and from each other, said strip feeding means including a pair of band feeding rolls movable toward and from each other, means coupling said rolls for continuous rotary movement when apart, a lever, one arm of which has a feed roll controlling pin adapted to lie on the strip and move toward and from said table and across the path of the strip at the side of said presser head opposite that of the feed rolls, means whereby reciprocal movement of said lever is adapted to cause said feed rolls to move toward and from each other, a strip advancing head, and a strip brake movable with and toward and from said table.

69. A machine for joining strips together to form a band including, in combination, a table for supporting the parts of the strips to be joined, a presser head adapted to cooperate with said table to press said strips for joining them, means adapted to feed the strips to be joined into overlapping relation to each other on said table, means adapted to move said table and said presser head in opposite directions transversely of the path of the strips and toward and from each other, said strip feeding means including a pair of band feeding rolls movable toward and from each other, means coupling said rolls for continuous rotary movement when apart, a lever, one arm of which has a feed roll controlling pin adapted to lie on the strip and move toward and from said table and across the path of the strip at the side of said presser head opposite that of the feed rolls, and means whereby reciprocal movement of said lever is adapted to cause said feed rolls to move toward and from each other, a strip advancing head, and a strip brake movable with and toward and from said table, said advancing head having a cam and said brake an arm adapted to cooperate to apply and release said brake in timed relation to the feeding effect of said rolls.

70. A machine for joining strips together to form a band including, in combination, a frame, a magazine adapted to support a pile of strips, means for moving said magazine upwardly and supporting the same for vertical reciprocal movement including a pair of levers respectively linked to opposite ends of the magazine and a spring operatively connected to said levers for resiliently urging them in the directions to raise said magazine, a staff depending from the central part of said magazine, power actuated means cooperating with said staff to restrain the staff from upward movement at intervals under the stress of said spring, a vertically movable strip supporting and pressing table, a power actuated device for raising and lowering said table, a presser head overlying said table, a power actuated device for raising and lowering said presser head, a suction head operatively reciprocal between said magazine and table adapted to pass between said table and said presser head, a strip brake pivoted to said table, a pair of band feed rolls, means including a lever adapted to cause one of said feed rolls to approach and recede from the other, and a pin carried by said lever and overlying the path of the strip on said table for controlling the action of said lever on said feed roll.

In testimony whereof I affix my signature.

HAROLD CARLE.