Aug. 23, 1932. H. C. HEBIG 1,872,945

TAPE SERVING MACHINE.

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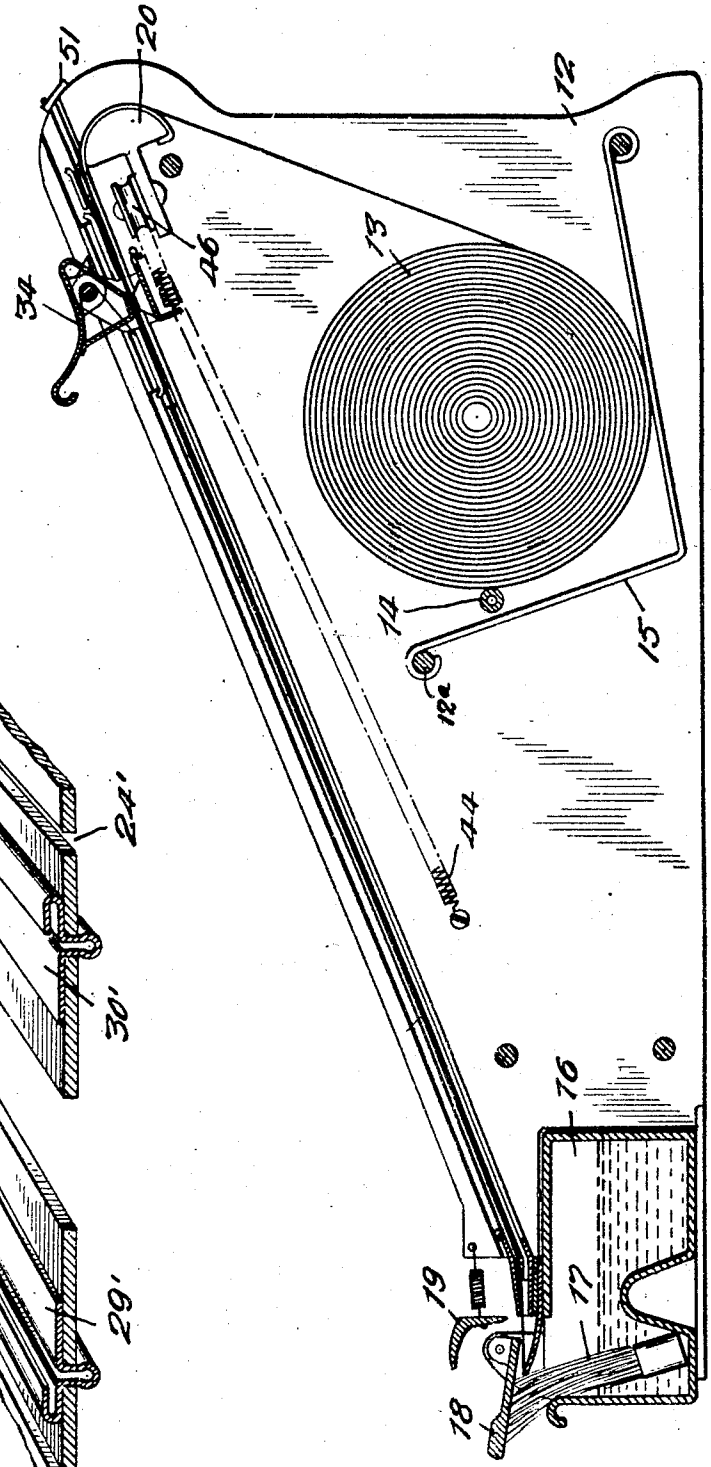


Fig. 1.

Fig. 2.

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TAPE SERVING MACHINE

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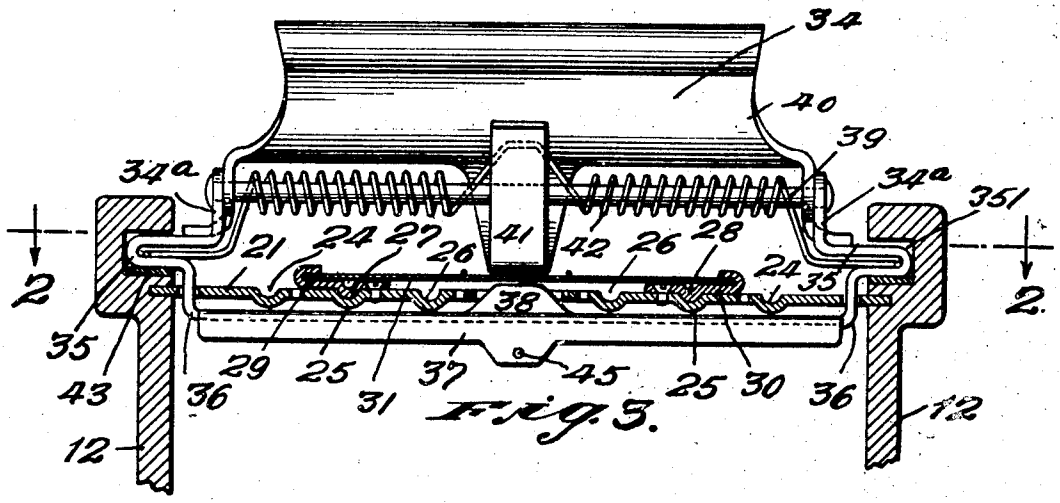


Fig. 3.

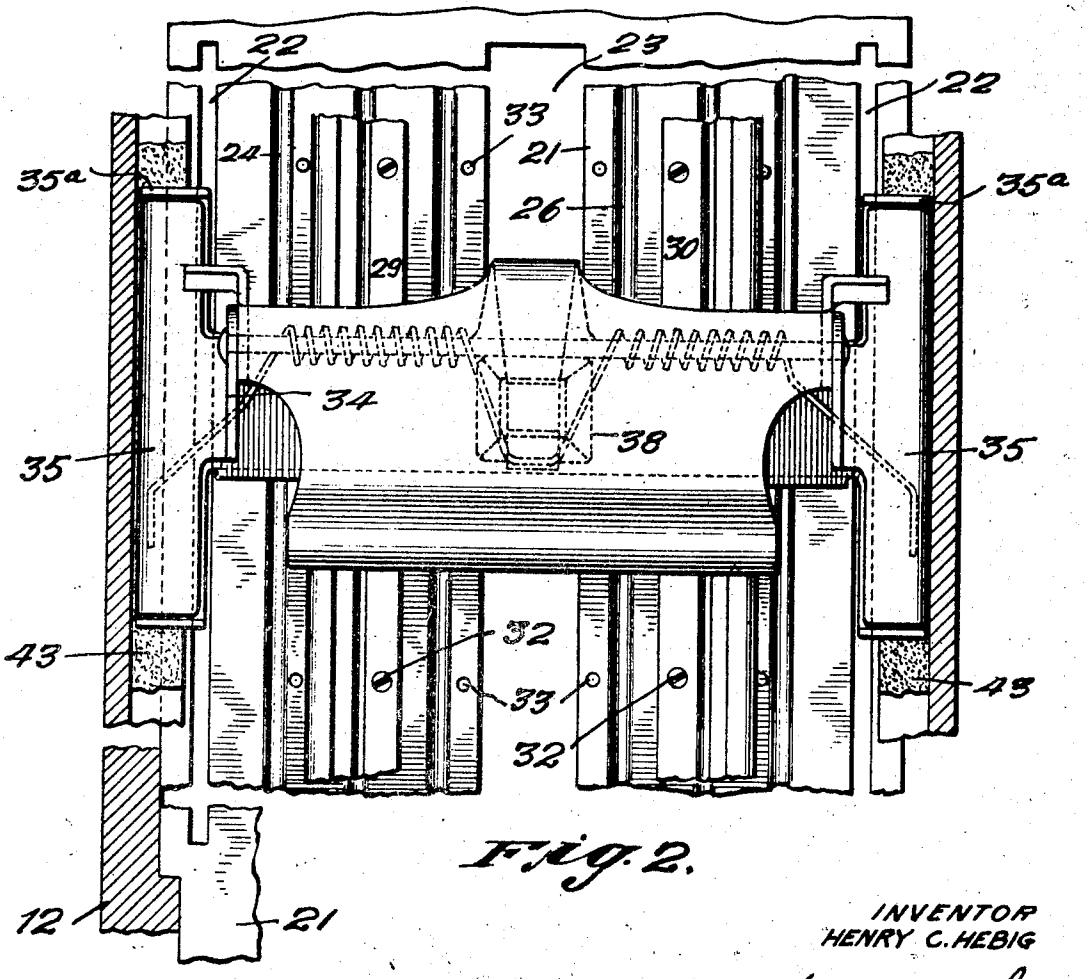


Fig. 2.

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TAPE SERVING MACHINE

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Fig. 4.

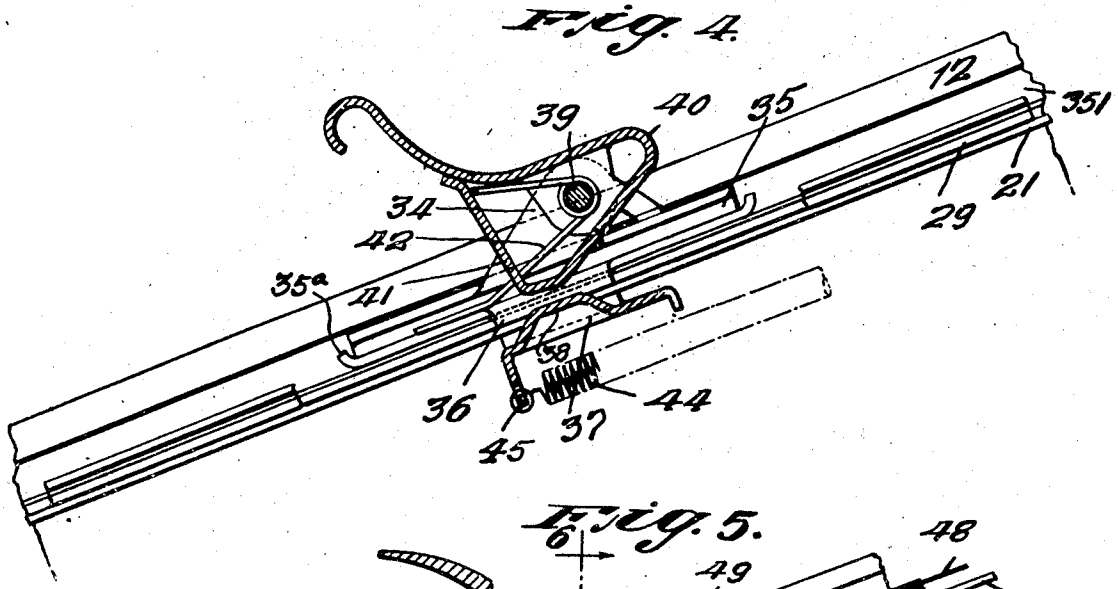


Fig. 5.

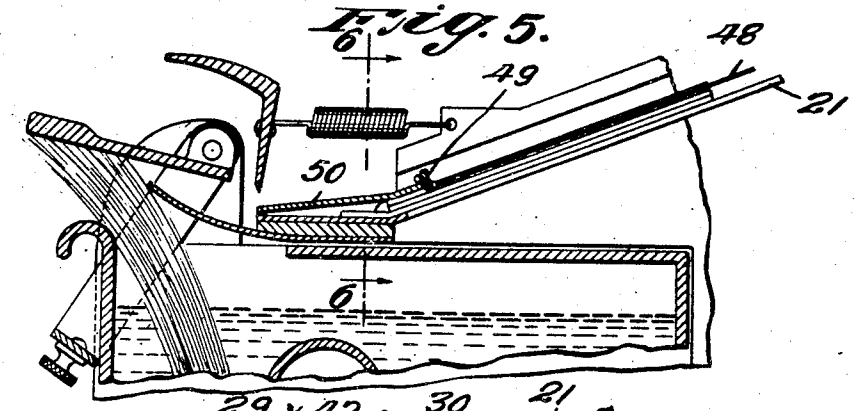


Fig. 6.

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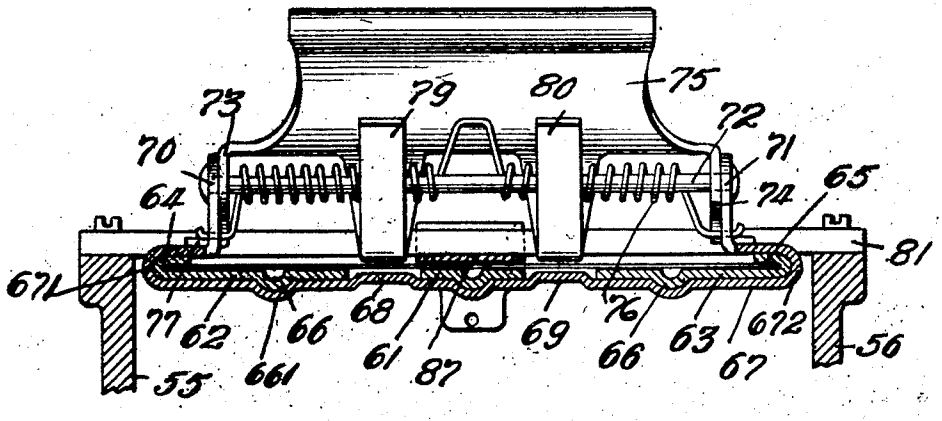
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Aug. 23, 1932. H. C. HEBIG 1,872,945

TAPE SERVING MACHINE

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Fig. 9.



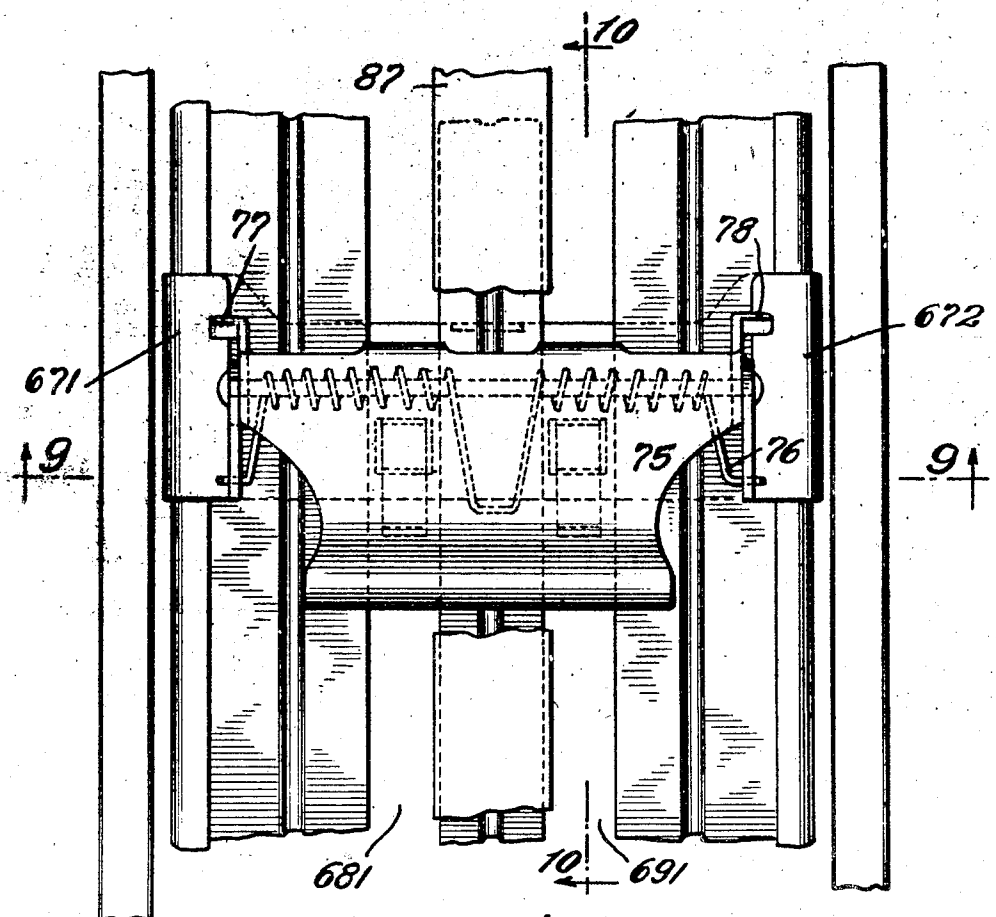


Fig. 8.

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TAPE SERVING MACHINE

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Fig. 10.

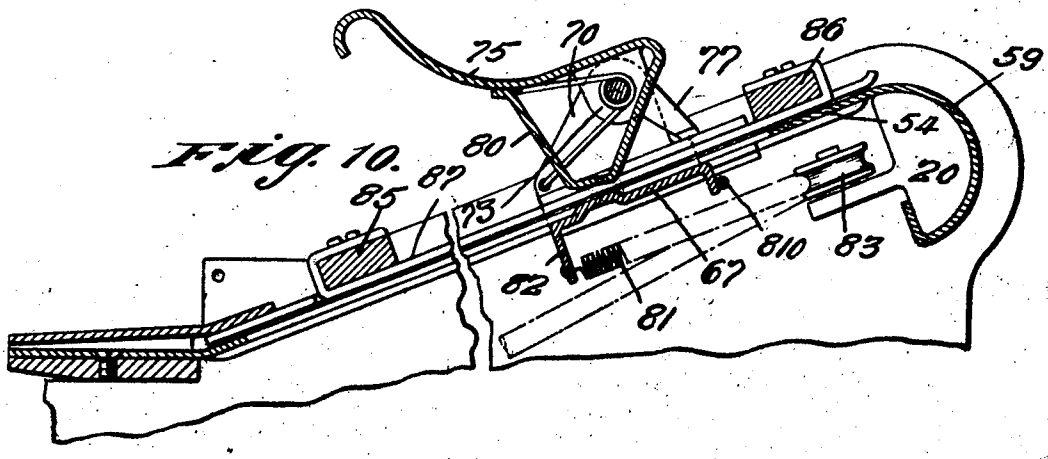
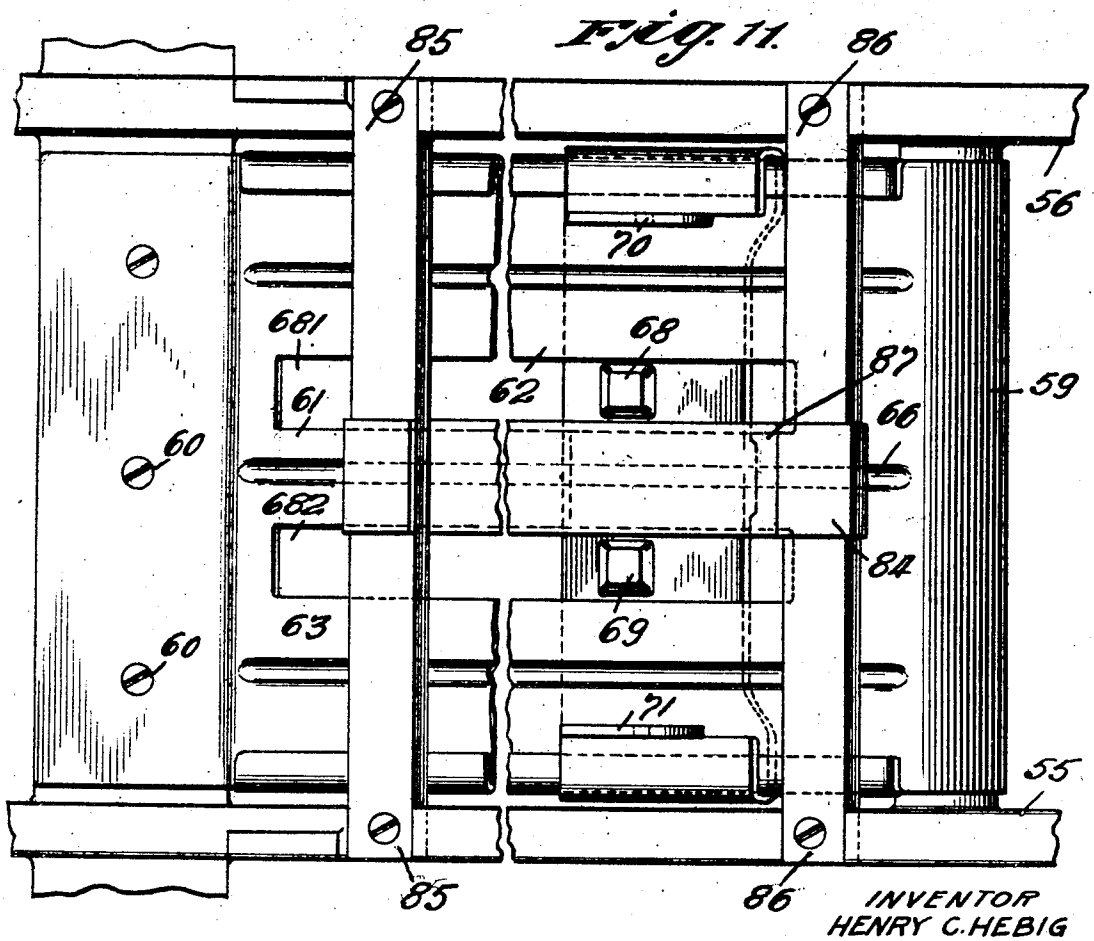


Fig. 11.



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Patented Aug. 23, 1932

1,872,945

UNITED STATES PATENT OFFICE

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TAPE SERVING MACHINE

Application filed June 24, 1925. Serial No. 39,191.

This invention relates to machines for serving lengths of tape from a source of tape supply, and for the purpose of illustration has been shown as an improvement on the tape serving machine shown in the prior copending application of Theodore H. Krueger, Ser. No. 696,907, filed March 4, 1924. In said application a device is disclosed in which a gummed tape passes from a supply roll down an inclined guide and over a moistening brush projecting from a water tank. The tape is advanced by means of a hand feeding device movable along the inclined guide, and is cut off by a shear at the foot of the guide which is adapted to be manipulated in the same movement of the hand which effects the feeding.

In tape serving devices generally it is the usual practice to feed the tape by means of a member which engages the tape at one place only. Thus, in said prior application above identified, the tape feeding device comprises a member which engages a single transverse section of the tape, near its center. Such a feeding device may fail to effect smooth, easy and positive feeding, particularly if the gum on the tape be somewhat softened by exposure in an atmosphere of high humidity. Moreover, even if the gum is perfectly dry one edge of the tape may encounter a greater frictional resistance than the other edge, with a resultant tendency to cross feeding if the feeding device grips the tape only at the center.

A further defect which is common in tape serving machines is that a given machine is constructed for tape of a certain width, and is inefficient or useless with tape of any other width.

The present invention contemplates, among other things, a feeding device which will insure a positive feeding of the tape under all conditions by engaging the tape at a plurality of positions. The invention further contemplates the provision of means whereby a single machine will effectively handle tape of different widths. It also contemplates a machine in which the tape will be positively guided in its movement through the machine but will be substantially unenclosed so that it is easy to get access to the tape at any point, and to clean the guides in case the gum from the tape accumulates therein.

Other objects and advantages of the machine will appear as the description proceeds.

The accompanying drawings illustrate embodiments of the invention as follows:

Fig. 1 is a longitudinal section through a machine embodying an improved and adjustable tape guiding means.

Fig. 2 is a fragmentary plan view, the tape feeder guides being broken away on the line 2—2 of Fig. 3.

Fig. 3 is a fragmentary transverse section showing the tape guide and tape feeding device.

Fig. 4 is an enlarged fragmentary longitudinal section showing the paper feed device.

Fig. 5 is a fragmentary enlarged longitudinal section showing the end of the tape guide, and the moistening and cutting devices.

Fig. 6 is a fragmentary transverse section on the line 6—6 of Fig. 5.

Fig. 7 is a fragmentary perspective of a modified form of tape guide plates.

Fig. 8 is a fragmentary plan view of a double grip tape feeding mechanism.

Fig. 9 is a fragmentary sectional elevation on the line 9—9 of Fig. 8.

Fig. 10 is a fragmentary longitudinal elevation on the line 10—10 of Fig. 8.

Fig. 11 is a fragmentary plan view showing the end portions of the paper guide.

In the form of embodiment illustrated in Figs. 1 to 6, the machine comprises a pair of substantially triangular shaped side plates 12, between which a supply 13 of tape rests upon a plate 15 and against a roller 14, the plate and roller being supported on cross members 12^a extending between the side plates. Adjacent to the lower end of the side plate 12 which may be recessed therefor, is a tank 16, containing a moistening brush 17, by which the tape is moistened as it passes between the end of the brush and a pivoted weighted bar or presser plate 18, after passing under the shear 19 by which the length of tape desired is cut off. This portion of

the machine is constructed substantially as described in the prior application above referred to. The tape from the supply roll 13 passes upward and over a cross member 20 into an inclined tape guide, which may be constructed as follows:

An inclined table or support 21 extends substantially the length of the side plate 12, and may be projected into grooves in the side plates 12, as clearly illustrated in Fig. 3. Slots 22 at each side, and a center slot 23, extend longitudinally of the table, substantially from end to end thereof. The function of these slots will be presently described. The table likewise is provided with a plurality of pairs of longitudinal corrugations 24, 25 and 26, which extend substantially from end to end thereof, and not only serve to stiffen the table, but also receive similar corrugations 27 and 28 on the adjustable tape guiding members 29 and 30. The edges of the guide members 29 and 30 are turned inward, forming recesses adapted to receive the edges of the tape 31. The guide members are secured to the table 21 by means of screws 32. Threaded openings 33, adapted to receive the screws 32 are provided adjacent each of the corrugations 24, 25 and 26, so that the guide members may be adjusted to accommodate any of the three widths of gummed tape in common use. If desired, the machine may be given a capacity for handling more or different widths of tape than those which have been illustrated.

In Fig. 7 I have shown a modified form of table and guide device in which the table 21′ is provided with longitudinal slots 24′ instead of corrugations, and the guide members 29′ and 30′ comprise deep corrugations, or loops, adapted to be sprung into said slots, and thereby retain the guide members without the aid of screws.

The means provided for gripping the tape and moving it along the guide members, comprise a sheet metal carriage 34 having upstanding ears 34ª which are bent to form lateral extensions or loops 35 which extend into and are slidably received in recesses 351 along the top edge of the frame plates 12. The ends of the lower part of loops 35 project beyond the upper part, and are curved upwardly at 35ª, as seen in Fig. 4, to facilitate sliding of the carriage along the plates 12. Downwardly projecting arms 36 extend through the slots 22 at the sides of the table 21, and are connected beneath the table by an apron 37. A projection 38, struck up from the middle of apron 37 extends upward through the center slot 23 and terminates in a flat face adjacent to the tape.

Extending between the upstanding ears 34 of the paper feed carriage is a rod 39 to which is pivoted a finger piece 40, comprising a gripping member or presser 41 overlying the projection 38, and with projection 38 forming a tape gripping device. The finger piece is urged away from tape gripping position by spring 42 which may conveniently be wound about rod 39. Strips of felt 43 in the recesses 351 retain the projections 35 snugly, and without excessive friction, insuring easy and noiseless operation. The tape feeding member may be returned to the Fig. 1 position at the end of each feeding stroke, by any suitable means such as a coil spring 44 attached to the carriage at 45, passing around a roller 46 at the upper end of the table 21, and fixed to one of the side plates. The tape may be held against buckling or wrinkling by longitudinal guide wires 47 and 48, which pass through and are secured to a vertical flange 49 on a transverse plate 50, secured at the lower end of the machine adjacent the shear 19. The upper ends of wires 47 and 48 are similarly secured to an adjustable transverse bar 51, extending between the frame members at the top of the table 21. By providing relatively small diameter wires 47 and 48 to prevent buckling of the tape, the surface of the tape is substantially uncovered and it is easy to get to the tape to remove it if it becomes stuck in the machine, or to clean the table 21 and the tape guides if they become gummy from the tape.

Figs. 8 to 11 illustrate a double grip tape feeding mechanism, applied to this type of tape serving machine. In this embodiment of the invention, the supporting table 54 is received between but spaced from the side plates 55 and 56. The upper end 59 of the table is curved downwardly about a cross member 20 and the lower end is secured adjacent the shear by screws 60. The body of the table comprises a center section or strip 61 and outside sections 62 and 63 integral with the ends of the table with slots 681 and 691 intervening between the edge portions 62 and 63 and the center section. The outer edges of the sections 62 and 63 are bent upwardly and inwardly to form tape guiding grooves 64 and 65, and each of the table sections may be stiffened by a longitudinal corrugation 66.

The double grip tape feeding device may comprise a carriage of sheet metal constructed as follows: An apron 67 passing transversely beneath the table is shaped to conform to the configuration of the table, having corrugations 661 adapted to receive the corrugations 66, and upwardly projecting sections 68 and 69 adapted to enter the longitudinal slots 681 and 691 between the center and the outside sections of the table. The ends of apron 67 are curved upwardly and inwardly at 671 and 672 to encircle the inturned edges of the table, and terminate in upwardly extending ears 70 and 71. The carriage rides upon the table 54. Between the ears 70 and 71 extends a rod 72 on which are pivoted the downwardly extending ears

73, 74 of a finger piece 75 which is urged in a counter clockwise direction (Fig. 10) by suitable means, such as a spring 76 and is stopped by the engagement of lugs 77, 78, with parts 671 and 672 of the feed carriage. A pair of gripper members 79, 80 which may be integral extensions of the metal of the finger piece bent to form flat bottomed loops extending over the slots 681 and 691 toward the projections 68 and 69 of the transverse apron 67. When the finger piece is rocked about its pivot against the tension of spring 76, the tape will be firmly gripped between the gripping members 79 and 80 and the projections 68 and 69 respectively. The tape is thus engaged at two different, transversely aligned positions and when the carriage 75 is moved down the table 54, positive and straight feeding of the tape is insured.

The tape feeding device may be returned to the upper end of the table by a spring 81 attached to a lug 82 on apron 67, and extending over a roller 83 on the frame. The movement of the feeding device by spring 81 is stopped by the engagement of an abutment 810 with apron 67.

The middle part of the tape may be guided and prevented from buckling by a guide bar 87, secured at its ends to transverse bars 85, 86, suitably attached to the frame.

It will be seen that I have provided a novel and effective means of engaging wide tape in such a way as to insure positive and accurate feeding, as well as a broadly novel and effective means of adapting a machine to tape of different widths. The invention is not, therefore, to be considered as limited to the specific embodiments which have been illustrated and described, but is to be construed as extending to all equivalent devices falling within the scope of the appended claims.

I claim:

1. In a tape serving machine, in combination, a tape guiding means comprising a table, a longitudinally extending bar, superposed over said table and tape feeding means comprising tape engaging members located on opposite sides of said bar, said bar stiffening said tape to permit it to be pushed from the machine.

2. In a tape serving device, in combination, a frame, a table comprising a plurality of longitudinaly extending slots secured at its ends to said frame, a tape guiding bar overlying an intermediate section of said table, means for supporting said bar secured to said frame, and a tape feeding means, cooperating with said slots to grip said tape and force it from the machine.

3. In a tape serving machine, in combination, means for guiding the edges of the tape, means for gripping the tape at a plurality of transversely spaced points and feeding it forward, and a guide bar overlying the tape intermediate the tape gripping means.

4. In a tape serving machine, means to support a strip of tape, a guide bar adapted to overlie the middle portion of the tape and a tape feeding finger piece comprising tape engaging members which extend downwardly on either side of said guide bar, to engage the tape and to serve the tape from the machine.

5. In a tape serving machine of the class described having a tape supporting table, means to engage an intermediate portion of the tape to force it from the machine and a single elongated bar superposed longitudinally over said table to prevent buckling of the tape when it is forced from the machine.

6. In a tape serving machine of the class described comprising a tape supporting table, a tape feeding device adapted to grip the tape to force it from the machine and open, non-clogging means superposed over and extending longitudinally of said tape to prevent buckling during the serving operation.

7. In a tape serving machine, the combination of a tape support, tape feeding means to move the tape along said support, and guiding means extending lengthwise of the support solely over the central portion of the tape to permit it to be fed smoothly from the machine by said tape feeding means.

8. In a tape serving machine, the combination of a support for the tape, means for engaging the tape, and a bar extending along the support over the tape to prevent the tape from buckling when engaged by the feeding means, the latter having members to engage the tape on both sides of the bar.

9. In a tape serving machine, in combination, a supporting table comprising a plurality of longitudinaly extending slots and a plurality of longitudinally reinforced corrugations, means extending through one of said slots to make gripping contact with the tape, and a plurality of wires adjacent said slots and extending longitudinally of said machine to prevent the tape from buckling.

10. In a tape serving machine a supporting table comprising a plurality of longitudinal slots, a tape feeding device comprising parts extending into and through said slots to make gripping contact with the tape, means on said feeding device projecting upward adjacent said parts contacting with the bottom of the tape, and a non-clogging flat bar superposed on said tape to stiffen the tape during feeding.

11. In a tape serving machine a frame, a tape supporting table, a tape feeding device slidably supported in said frame and extending through said table and adapted to move parallel with said table and to grip the tape on said table and feed it from the machine,

and non-clogging wire means to prevent the tape from buckling.

12. In a tape serving machine means for supporting a strip of tape, and a tape feeding device comprising means for gripping the tape at a plurality of transversely spaced points on the same side of the tape between two portions of said feeding device, said plural gripping device feeding said tape forward in a straight line, and non-clogging means to prevent buckling of the tape as it is fed into the machine.

In testimony whereof I have affixed my signature to this specification.

HENRY C. HEBIG.