April 19, 1927. 1,625,157

H. L. ROBERTS

FEEDING MECHANISM FOR TAG STRINGING MACHINES AND THE LIKE

Filed Jan. 30, 1924 3 Sheets-Sheet 1

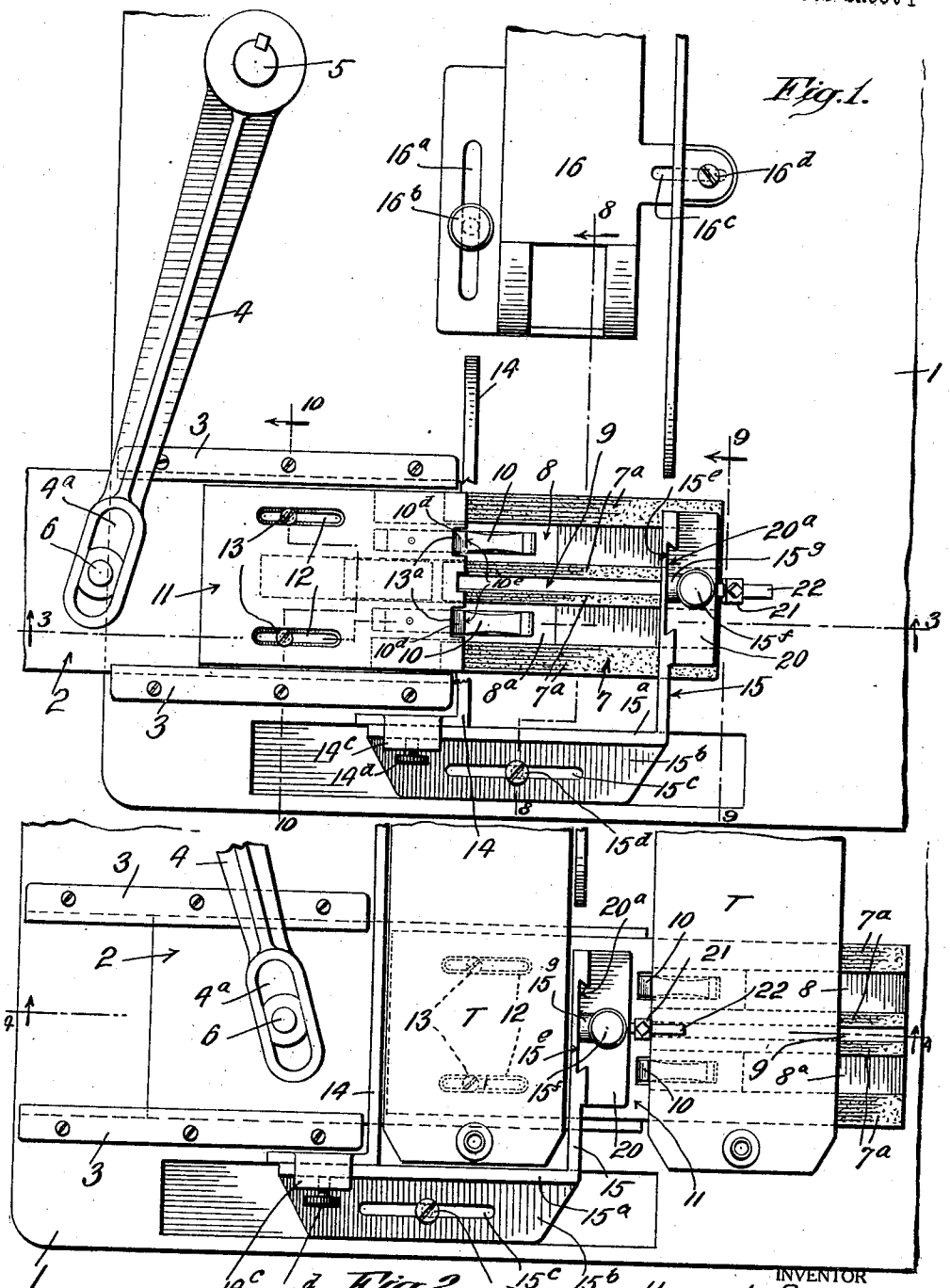


Fig. 1.

Fig. 2.

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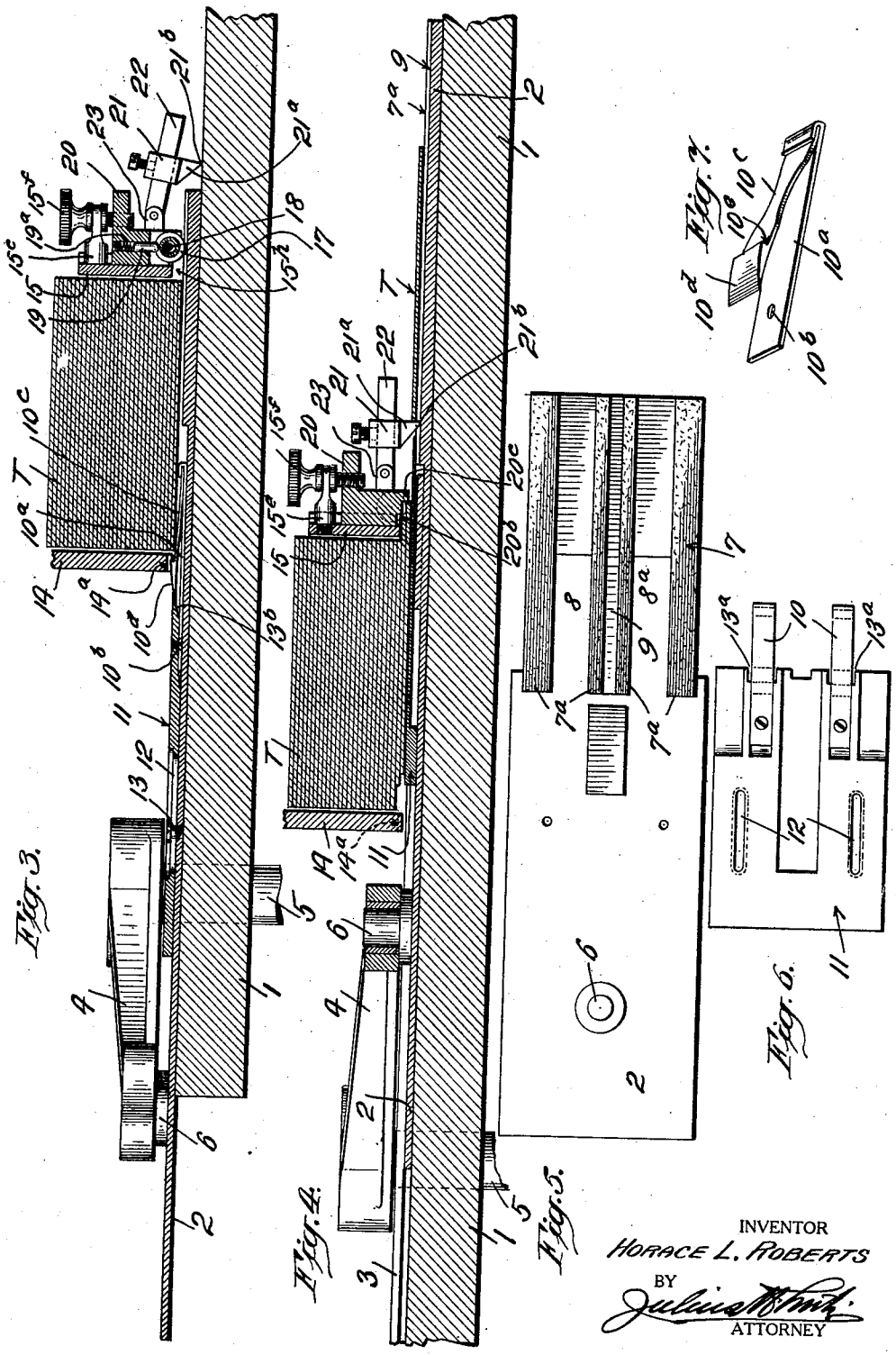


Fig. 3.

Fig. 4.

Fig. 5.

Fig. 7.

Fig. 6.

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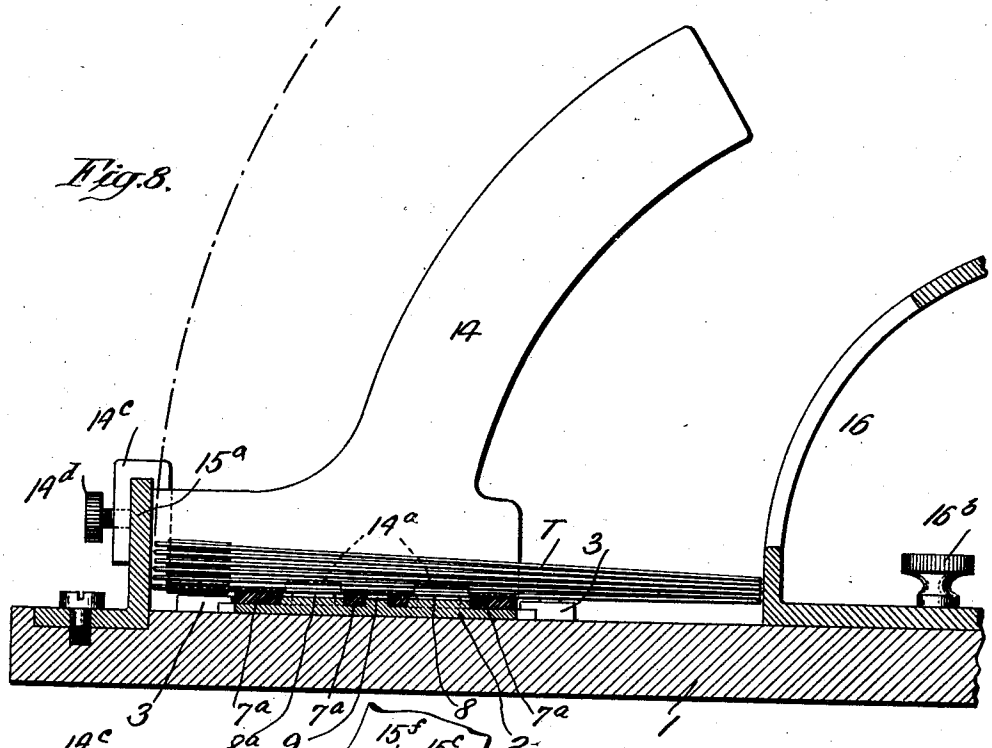
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Fig. 8.



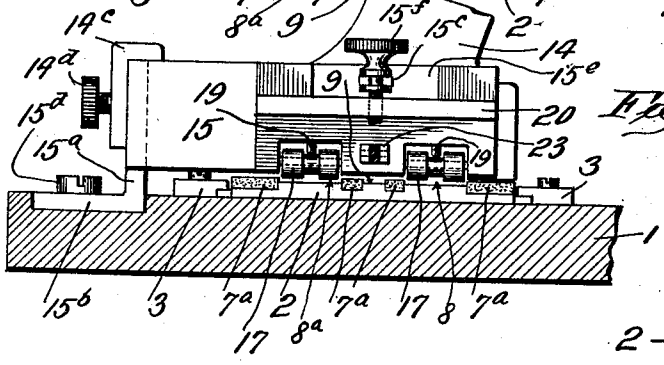


Fig. 9.

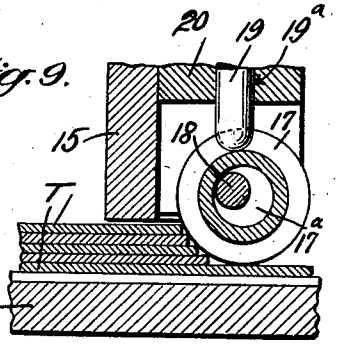


Fig. 10.

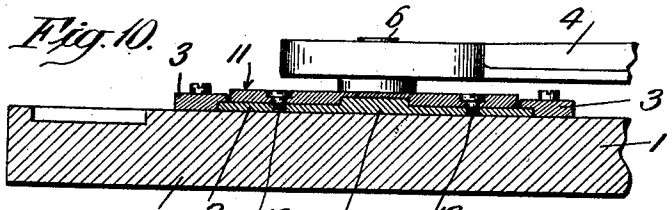
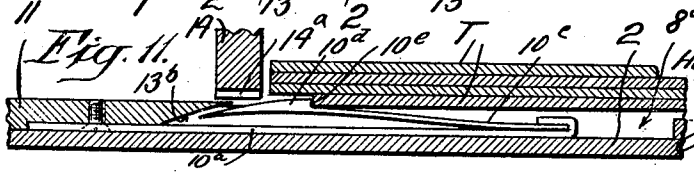


Fig. 12.

Fig. 11.



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Patented Apr. 19, 1927. 1,625,157

UNITED STATES PATENT OFFICE.

HORACE L. ROBERTS, OF MOUNT VERNON, NEW YORK.

FEEDING MECHANISM FOR TAG-STRINGING MACHINES AND THE LIKE.

Application filed January 30, 1924. Serial No. 689,411.

This invention relates to improvements in feeding mechanism for tag stringing machines and the like, and is particularly an improvement upon the feeding mechanism shown in my former Letters Patent No. 1,365,853, dated January 18th, 1921.

In machines such as tag-stringing machines it is desirable that stacked tags may be fed one at a time without duplication and in proper relationship to stringing apparatus or like devices, and heretofore in the movement of one of the tags by the feeding mechanism, a second tag was sometimes moved with the same and at times the tags were not positioned by the feeder in proper alignment for the stringing apparatus or other device for the next operation.

One of the objects of this invention is to obviate this impositive movement of such tags and cause the same to be moved positively one at a time from beneath a stack thereof.

Another object of this invention is to produce a feeding mechanism for tag stringing machines and the like, by the use of which the stacked tags may be successively and positively carried one at a time and without duplication to the stringing means or other operating device.

Still another object is to provide means or material preferably on the carrier which will produce a frictional grip on the tag which is being moved of greater force than the frictional grip between the abutting surfaces of two cards, and in the preferred embodiment I provide an elastic material such as rubber strips so as to prevent undesirable movement of the card during the carrying of the same from stacked to stringing position or the like.

Still another object of this invention is to provide, in combination with a frictional gripping member above specified, a singling element adapted to permit the passage of the lowermost tag or card only, and in the preferred embodiment of my invention I utilize for this purpose a curved or arcuate surface or surfaces preferably comprising the periphery or peripheries of a roller or rollers mounted above the carrier in the path of the tags moved thereby and arranged to roll, swing or yield with the movement of a carriage a slight distance to permit the single frictionally gripped tag to slide beneath the same and then to become locked or jammed against further rotation to prevent the sliding by of other superimposed tags.

With these and other objects in view, the invention comprises the combination of members and arrangement of parts so combined as to co-act and cooperate with each other in the performance of the functions and the accomplishment of the results herein contemplated, and comprises in one of its adaptations the species or preferred form illustrated in the accompanying drawings, in which:—

Fig. 1 is a plan view of a feeding device embodying my invention having the parts in starting position;

Fig. 2 is a similar view in plan of a portion of the device shown in Fig. 1 with the movable carrier in movement finishing position;

Fig. 3 is a section on the line 3—3 of Fig. 1 looking in the direction of the arrow;

Fig. 4 is a section on the line 4—4 of Fig. 2 looking in the direction of the arrow;

Fig. 5 is a view in plan of the carrier separated from the operating mechanism and having the gripper fingers and mounting plate therefor removed;

Fig. 6 is a bottom view of the mounting plate for the gripper fingers;

Fig. 7 is a perspective view of one of the gripper fingers employed by me;

Fig. 8 is a section on the line 8—8 of Fig. 1 looking in the direction of the arrow;

Fig. 9 is a section on the line 9—9 of Fig. 1 looking in the direction of the arrow;

Fig. 10 is a section on the line 10—10 of Fig. 1 looking in the direction of the arrow;

Fig. 11 is a fragmentary enlarged section of a gripper finger in the act of engaging the lowermost tag in the stack; and

Fig. 12 is an enlarged fragmentary vertical section of the singling element or roller employed by me.

Referring now to these drawings, which illustrate a preferred embodiment of my invention, 1 indicates the bed of a machine which may be a tag-stringing or similar device for operating on tags or cards. Mounted on the bed of the machine in registration with the card-stringing or other device is a carrier 2 which, as shown, is mounted to reciprocate in ways 3 and, as illustrated, is reciprocated by means of an arm 4 from a vertical shaft 5 oscillated from any suitable source of power not shown. The arm 4 is, as illustrated, provided with a slot 4ª which

fits over a stud 6 pivotally mounted on the carrier so that when the arm 4 is swung back and forth the carrier 2 will be reciprocated within the ways 3. The carrier 2, as illustrated, is oblong in conformation, being elongated from its connection with the arm 4 to extend within a stacking box hereinafter described and beneath a stack of tags stacked within said box, and said carrier is provided with a bed portion 7, on which the stacked tags are adapted to be superimposed. This bed portion 7 of the slide is preferably provided with a material, and preferably an elastic material, which will have the property of maintaining a frictional grip on or contact with the paper tags of greater degree than the frictional contact of tags with each other and in the preferred form I utilize a series of four strips 7^a of rubber spaced from each other to provide longitudinal grooves 8—8^a—9 respectively. These rubber strips are relatively thin and suitably positioned in the spaces between the rubber strips and extending longitudinally thereof are a pair of gripper fingers 10 which preferably are of the construction more particularly shown in Figs. 7 and 11, and comprise a base member 10^a having a screw fastening aperture 10^b by means of which the same are mounted on the slide, and a resilient or spring member 10^c connected at one end to the base member and having a yieldingly-raised tag engaging head 10^d rounded or tapered toward the end thereof and provided with a shallow notch 10^e, the result being that the gripper finger is yieldingly pressed against the lowermost tag in the stack and the yielding upward pressure of the spring-raised head will compensate for any unevenness in the surface of the lowermost tag and will positively engage the same. Two independently-operable grippers are employed so as more surely to engage the edge of the tag and move the same uniformly. As shown, these gripper fingers are adjustably mounted on the carrier by fixedly fastening the same to an adjusting plate 11 which is provided with adjusting slots 12 adapted to be adjustably fastened to the carrier by screws 13.

As illustrated, the said plate 11 is provided at its forward end with notches 13^a with which the gripper fingers 10 register and the rounded engaging head 10^d of the gripper finger extends beneath an undercut or hollowed out portion 13^b, which registers with the said notches 13^a and form a seat for the rounded head 10^d of the gripping finger and limits the upward motion thereof, so that a portion of the tag engaging head projects a proper distance above the same for the purpose of gripping a card or tag when superimposed upon the bed portion 7 of the slide on which the cards or tags are superimposed.

In the preferred form of feeder illustrated, the bed 7 is walled or boxed in. At the rear end the wall of the stacking box comprises a guide wall 14 adjustable with relation to the other walls as hereinafter specified and having notches 14^a through which the spring-raised fingers extend to register with and engage the edge of a stacked tag. The front or forward end and one side of said bed are walled in by walls 15 and 15^a formed integrally in an angle piece 15^b which is adjustably mounted on the bed of the machine by means of a slot and pin connection comprising a slot 15^c which is engaged by a screw 15^d to enable adjustment of this angle piece in relation to the bed of the machine, and the guide wall 14 is adjustable relatively to the wall 15 by means of a strap 14^c and set screw 14^d, the strap 14^c being adapted to fit over the connecting wall 15^a and the set screw 14^d being adapted to fasten the two walls together. The wall portion 15^a of the angle piece 15 is provided with an opening or passage-way 15^h at its bottom portion, through which passageway a plurality of superposed tags will usually be moved or carried by the feeding movement of the carrier and the frictional engagement between the abutting surfaces of the tags.

While the elastic bed 7 provides a positive grip to retain the lowermost tag with which it contacts in immovable position on the carrier during the feeding movement thereof, the grippers retain alignment and also insure movement of said lowermost tag with the carrier. It is desirable to provide means for separating the lowermost tag from the tags superimposed thereon in order to enable a single tag to be carried by the carrier, and for this purpose I have mounted above the carrier in the passageway through which such tags must pass what I shall term a singling element or elements having an arcuate surface adapted to contact with the edges of the tags in their movement through the passageway, and the arcuate surface of this element normally extends toward the carrier to a plane closely adjacent to the surface thereof so as to substantially obstruct and close the delivery passageway between it and the carrier, but upon movement of the carrier and card said singling element is adapted to swing or roll a short distance to open up the passageway a sufficient distance to allow one card to move therethrough and then to lock or jam so as to prevent the passage of additional cards.

As illustrated (see Figs. 3, 9 and 12) these rollers 17 are provided with enlarged bores 17^a mounted upon axles or shafts 18 of smaller diameter and these rollers are, when the carrier is in its starting position, yieldingly pressed downwardly against the tags by a spring pressed pin inserted in the

vertical bore 19[a] in a bracket block 20 adjustably mounted on the forward wall 15 of the stacking box. When the carrier starts moving the friction between the lowermost tag and the card superimposed thereon will cause the same to be carried with said lowermost tag into contact with the arcuate periphery of said rollers. These rollers will then roll outwardly a sufficient distance to open up the passageway between the same and the bed of the carrier to afford an opening sufficient for the lowermost tag to pass therethrough and will become wedged or locked and be held against rotation so as to prevent the passage of additional tags through said passageway. It will be seen, therefore, that the arcuate surface of the roller is utilized for the purpose of singling out the lowermost tags and holding back the tags superimposed thereon and these arcuate surfaces of the roller completely close and obstruct the passageway above the carrier but rolls or swings so as to yield sufficiently to allow the lowermost single tag to pass through the passageway and thereupon jams or locks and presses against the top of said tag and completely blocks the passageway to prevent the passage of the superimposed tags. As illustrated, the angle piece 15 is provided with a dove-tailed groove 15[e] and the bracket block is provided with a dove-tailed portion 20[a] sliding vertically in the groove. The bracket block 20 is preferably provided at its lower end with a groove 20[b] registering with the passageway 15[d] of the front wall of the stacking box and the outer end is preferably provided with a toe 20[c] which, when the bracket is adjusted vertically, will provide a final delivery aperture of proper width to allow the passage through it of the lowermost tag singled out as aforesaid by the singling rollers.

The tags are delivered within the walls of the stacking box and on to the bed 7 of the carrier 2 by any suitable mechanism not shown, and, as illustrated, the tags are guided into the stacking box by a guide 16 which, as illustrated, is adjustable toward the carrying plate by means of a longitudinal slot 16[a] and screw 16[b], while it is adjusted longitudinally of the carrier by means of a slot 16[c] and screw 16[d].

The fastening of the block 20 in vertical adjustment is preferably accomplished by providing on the wall of the angle piece 15 a bracket bolt or plug 15[g] in which is mounted a set screw 15[f] which engages the sliding block 20 and enables vertical adjustment thereof to increase or diminish the space between the toe 20[c] and the carrier or slide 2.

In the preferred form of my invention illustrated, the rubber strips are, as aforesaid, positioned to leave spaces between the same and the rollers 17 in the bracket 20 register with the spaces between the rubber strips so that upon movement outwardly the rollers press the tags downwardly and resiliently against the gripper strips, so as to firmly retain the same in contact therewith. The bracket is also preferably provided with an adjustable stopping toe 21 which, as aforesaid, is slidably mounted on a lever 22 which is pivotally mounted on a lug 23. This toe 21 is also preferably mounted so as to register, when the carrier is moved forwardly with the central space 9 between the rubber strip and is provided, as illustrated, with an inclined face 21[a], with which the edge of the carrier engages on its outward movement so as to lift the same. When the carrier has made its forward movement the point 21[b] of the toe piece 21 will engage behind the tag or card and will retain the card or tag in stationary position during rearward movement of the carrier.

The edge 20[c] of the delivery slot may be adjusted in accordance with the thickness of a single card so as to closely abut the rubber strips which will contact with the under side of the card and produce a frictional grip on the same of greater force than the frictional grip between the upper surface of the card and the under surface of the second card.

The operation of the feeding mechanism hereinabove described is as follows:—

A stack of tags T is disposed within the stacking compartment and may be automatically moved into the same by any suitable mechanism not shown. As the bed 7 of the carrier 2 extends beneath this compartment the tags are supported upon the said bed and contact with the elastic strips. In order to feed a tag to stringing mechanism or other devices arranged adjacent to the stacking compartment the carrier 2 is by the arm 4 moved laterally. In this movement the gripping heads 10[d] of the gripper fingers 10 engage the edge of the card, the bottom surface of which is frictionally engaged by the rubber strips and said movement of the slide in combination with the singling out or separating of the bottom tag from the superposed tags by the singling rollers 17 will cause the bottom tag T to be moved through the delivery passageway 15[h] into position for the operation of the stringing device or other mechanism, said tag T being held in this position by the toe 21 during the reverse movement of the carrier into starting position, whereupon it will engage successive cards and the operation is repeated.

Having described my invention, I claim:—

1. In a feeding device for tag-stringing and like machines having a tag-stacking

compartment, a carrier having a tag-receiving bed extending beneath the stacking compartment and reciprocable through the stacking compartment, a rubber bed on the carrier for increasing the frictional contact between the carrier and the bottom surface of the tag, means for engaging the edge of the tag and means for overcoming the frictional contact between the lowermost tag and the tags superimposed thereon.

2. In a feeding device for tag-stringing and like machines having a tag-stacking compartment, a carrier having a tag-receiving bed extending beneath the stacking compartment and reciprocable therethrough, yieldable gripping fingers on said carrier adapted to yieldably press against and engage one edge of the lowermost tag and to cause said tag to be carried through the stacking compartment and into operative position for the next operation, means for retaining the tag in such operative position during the return movement of the carrier and means for overcoming the frictional contact between the lowermost tag and the tags superimposed thereon.

3. In a feeding device for tag-stringing and like machines having a tag-stacking compartment, a reciprocating carrier having a tag-receiving bed extending beneath the stacking compartment and reciprocable therethrough, spring-raised gripping fingers on said carrier adapted to engage one edge of the lowermost tag, a passageway in the wall of the stacking compartment above said carrier, a singling element having an arcuate surface obstructing said passageway and yieldable to permit only the lowermost tag to pass, and means for retaining the tag in such operative position during the return movement of the carrier.

4. In a feeding device for tag-stringing and like machines having a tag-stacking compartment; a reciprocating carrier having a tag-receiving bed extending beneath the stacking compartment and reciprocable through said compartment, spring raised gripping fingers on said carrier adapted to engage the edge of the lowermost tag, a passageway in the wall of the stacking compartment above said carrier, a singling element having an arcuate surface obstructing said passageway and yieldable to permit only the lowermost tag to pass, means for retaining the tag in such operative position during the return movement of the carrier, and a material on said tag-receiving bed having the property of exerting on the lower surface of the card a frictional contact of greater resistance to sliding movement than is exerted between the abutting surfaces of two tags.

5. In a feeding device for tag-stringing and like machines having a tag-stacking compartment, a reciprocating carrier having a tag-receiving bed extending beneath the stacking compartment and reciprocable through said compartment, spring-raised gripping fingers on said carrier adapted to engage one edge of the lowermost tag and to cause the same to be carried through the stacking compartment and into position for the next operation, means for retaining the tag in such operative position during the return movement of the carrier, a passageway in the wall of the stacking compartment above the carrier, a singling element having an arcuate surface obstructing said passageway and yieldable to permit only the lowermost tag to pass, and means for adjusting the size of said passageway and the position of said singling element.

6. In a feeding device for tag-stringing and like machines having a tag-stacking compartment, a carrier having a tag-receiving bed extending beneath the stacking compartment and reciprocable through said compartment, spring-raised gripping fingers on said carrier adapted to engage one edge of the lowermost tag and to cause the same to be carried through the stacking compartment and into position for the next operation, means for retaining the tag in such operative position during the return movement of the carrier, a passageway in the wall of the stacking compartment above the carrier, a singling element having an arcuate surface obstructing said passageway and yieldable to permit only the lowermost tag to pass, means for adjusting the size of said passageway and the position of said singling element, and a rubber strip on said bed for exerting on the lower surface of the card a frictional contact of greater resistance to sliding movement than is exerted between the abutting surfaces of two tags.

7. In a feeding device for tag-stringing and like machines having a tag-stacking compartment, a carrier having a tag-receiving bed extending beneath the stacking compartment and reciprocable through said compartment, spring-raised gripping fingers on said carrier adapted to engage one edge of the lowermost tag and to cause the same to be carried through the stacking compartment and into operative position for the next operation, means for retaining the tag in such operative position during the return movement of the carrier, a passageway in the wall of the stacking compartment above the carrier, a singling element having an arcuate surface obstructing said passageway and yieldable to permit only the lowermost tag to pass, means for adjusting the size of said passageway and the position of said singling element, rubber strips on said bed for exerting on the lower surface of the card a frictional contact of

greater resistance to sliding movement than is exerted between the abutting surfaces of two tags.

8. In a feeding device for tag-stringing and like machines having a tag-stacking compartment, a carrier having a tag-receiving bed extending beneath the stacking compartment and reciprocable through said compartment, spring-raised gripping fingers on said carrier adapted to engage one edge of the lowermost tag and to cause the same to be carried through the stacking compartment and into operative position for the next operation, a passageway in the wall of the stacking compartment above the carrier, a singling element having an arcuate surface obstructing said passageway and yieldable to permit only the lowermost tag to pass, means for adjusting the size of said passageway and the position of said singling element, a retaining toe pivoted on the wall of the stacking box for retaining the tag in such operative position during the return movement of the carrier, a rubber strip on said bed for exerting on the lower surface of the tag a frictional contact of greater resistance to sliding movement than is exerted between the abutting surfaces of two tags.

9. In a feeding device for tag-stringing and like machines having a tag-stacking compartment, means for adjusting the area of the stacking box, a carrier having a tag-receiving bed extending beneath the stacking compartment and reciprocable through said compartment, gripping fingers adjustably mounted on said carrier adapted to engage one edge of the lowermost tag and to cause the same to be carried through the stacking compartment and into operative position for the next operation.

10. In a feeding device for tag-stringing and like machines having a tag-stacking compartment, means for adjusting the area of the stacking box, a carrier having a tag-receiving bed extending beneath the stacking compartment and reciprocable through said compartment, gripping fingers adjustably mounted on said carrier adapted to engage one edge of the lowermost tag and to cause the same to be carried through the stacking compartment and into operative position for the next operation, a passageway in the wall of the stacking compartment above the carrier, a singling element having an arcuate surface obstructing said passageway and yieldable to permit only the lowermost tag to pass, means for adjusting the size of said passageway and the position of said singling element, a toe pivoted on the wall of the stacking box for retaining the tag in such position during the return movement of the carrier, a rubber strip on said bed for exerting on the lower surface of the tag a frictional contact of greater resistance to sliding movement than is exerted between the abutting surfaces of two tags, and hold-down rollers arranged adjacent to said delivery slot.

11. In a feeding device for tag-stringing and like machines having a tag-stacking compartment, means for adjusting the area of the stacking box, a carrier having a tag-receiving bed extending beneath the stacking compartment and reciprocable beneath said compartment, an adjusting plate adjustably mounted on the carrier, gripping fingers mounted on said adjusting plate and adapted to engage one edge of the lowermost tag and to cause the same to be carried through the stacking compartment and into operative position for the next operation.

12. In a feeding device for tag-stringing machines having a tag-stacking compartment, means for adjusting the area of the stacking box, a carrier having a tag-receiving bed extending beneath the stacking compartment and reciprocable beneath said compartment, an adjusting plate adjustably mounted on the carrier, gripping fingers mounted on said adjusting plate and adapted to engage one edge of the lowermost tag and to cause the same to be carried through the stacking compartment and into operative position for the next operation, a passageway in the wall of the stacking compartment above the carrier, a singling element having an arcuate surface obstructing said passageway and yieldable to permit only the lowermost tag to pass, means for adjusting the size of said passageway and the position of said singling element, a toe pivoted on the wall of the stacking box for retaining the tag in such operative position during the return movement of the carrier, and spaced rubber strips on said bed for exerting on the lower surface of the tag a frictional contact of greater resistance to sliding movement than is exerted between the abutting surfaces of two tags.

13. In a feeding device for tag-stringing and like machines having a tag-stacking compartment, means for adjusting the area of the stacking box, a carrier having a tag-receiving bed extending beneath the stacking compartment and reciprocable beneath said compartment, an adjusting plate adjustably mounted on the carrier, gripping fingers mounted on said adjusting plate and adapted to engage one edge of the lowermost tag and to cause the same to be carried through the stacking compartment and into operative position for the next operation, a passageway in the wall of the stacking compartment above the carrier, a singling element having an arcuate surface obstructing said passageway and yieldable to permit only the lowermost tag to pass, means for adjusting the size of said passageway and the position of said singling element, a toe

pivoted on the wall of the stacking box for retaining the tag in such operative position during the return movement of the carrier, spaced rubber strips on said bed for exerting on the lower surface of the tag a frictional contact of greater resistance to sliding movement than is exerted between the abutting surfaces of two tags, and hold-down rollers arranged adjacent to said delivery slot and positioned to engage the surface of the tag above the spaces between said rubber strips during the movement of said tag by the carrier.

In witness whereof, I have signed my name to the foregoing specification.

HORACE L. ROBERTS.