

June 16, 1931.

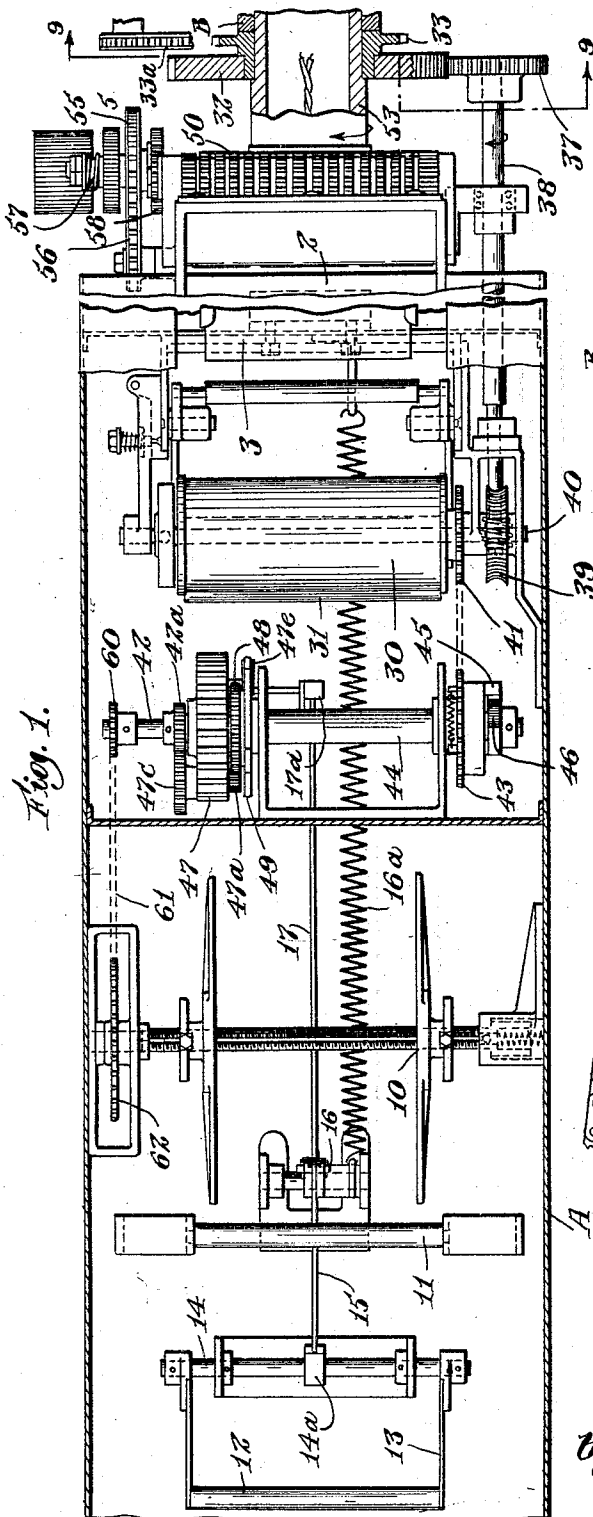
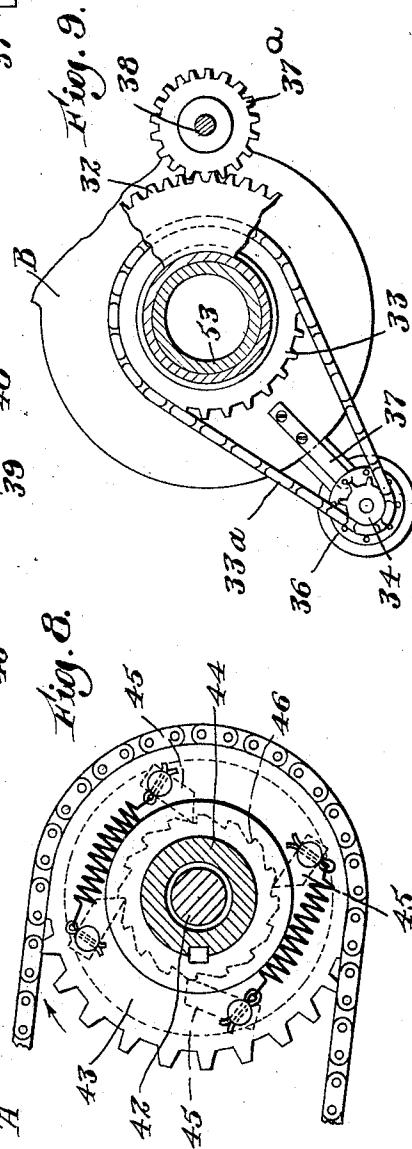
C. G. RICHARDSON

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MACHINE FOR APPLYING TRANSFER STAMPS

Filed March 15, 1929

3 Sheets-Sheet 1



Inventor
C.G. Richardson
by Geo. N. Goddard,
Attorney

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C. G. RICHARDSON

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3 Sheets-Sheet 2

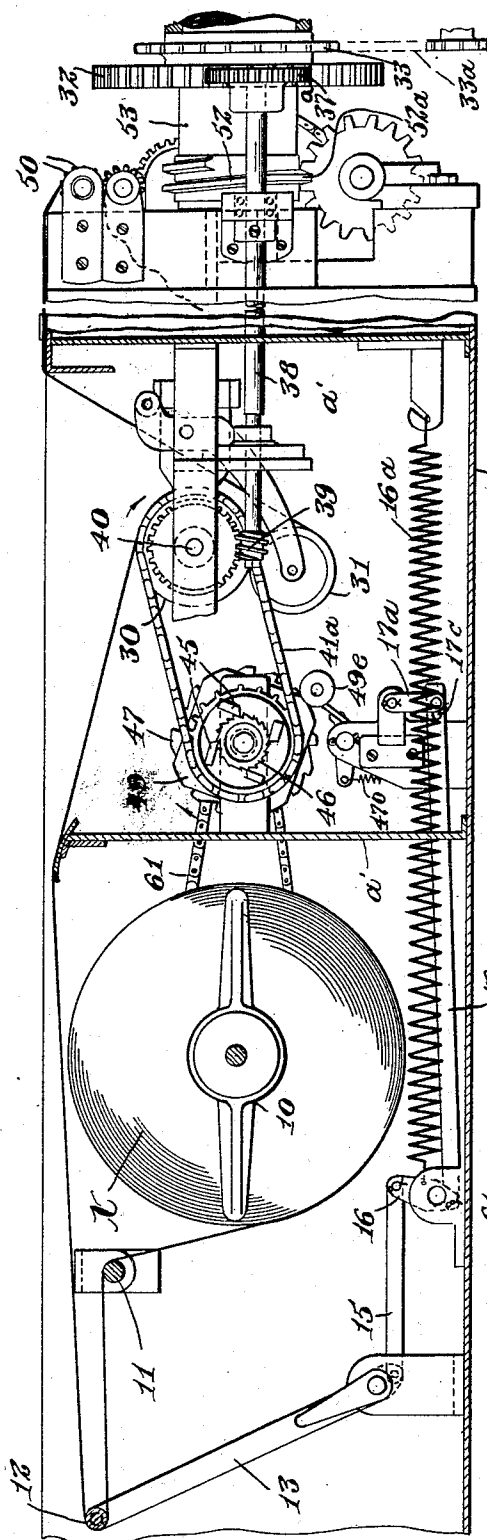


Fig. 2.

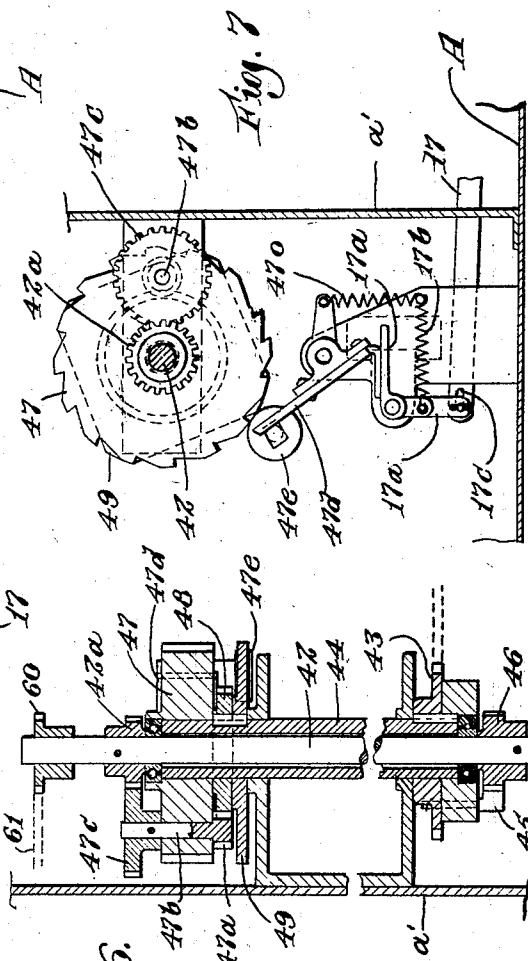


Fig. 6.

Inventor
C. G. Richardson
by Geo. N. Goddard,
Attorney

June 16, 1931.

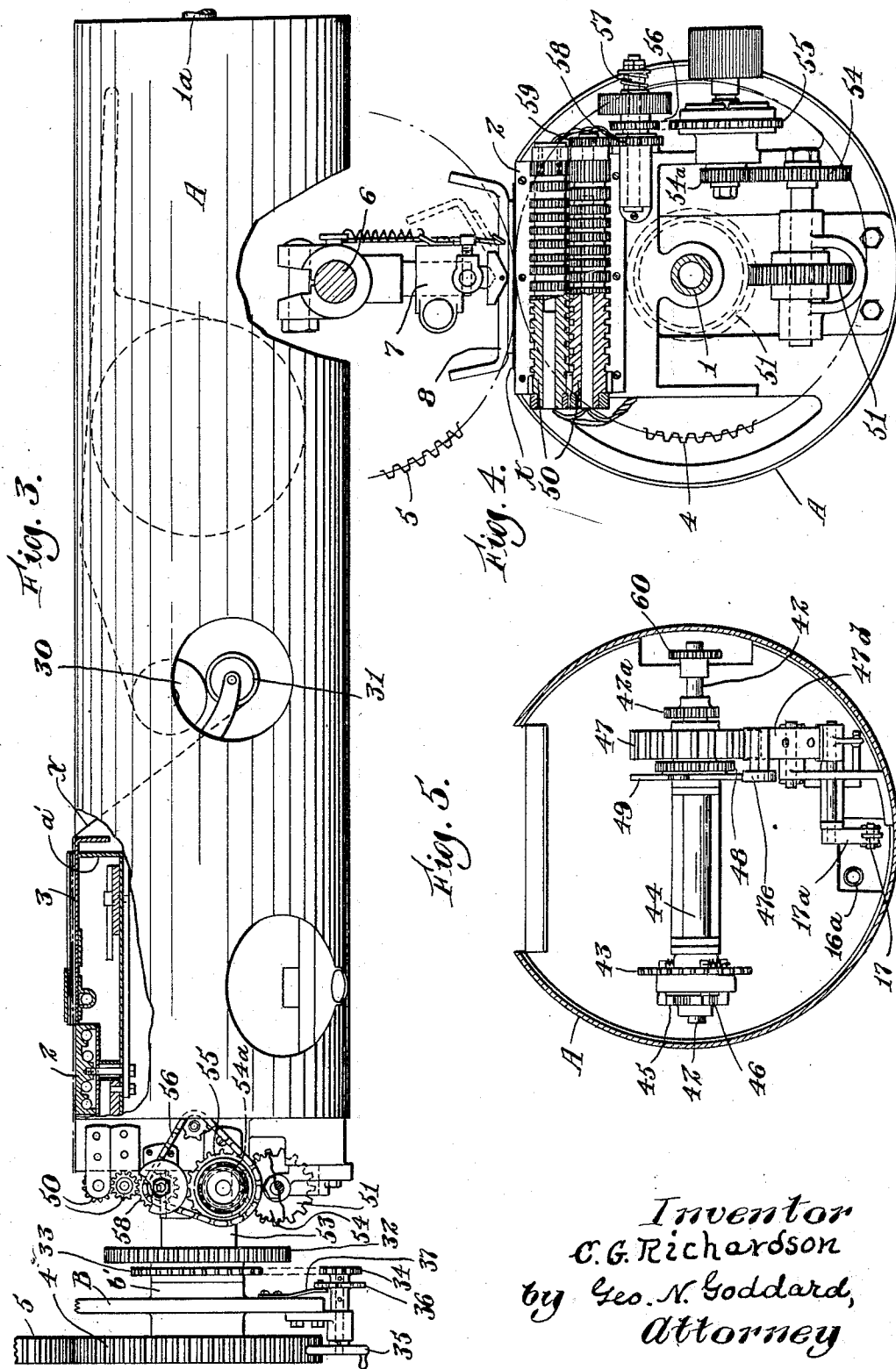
C. G. RICHARDSON

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MACHINE FOR APPLYING TRANSFER STAMPS

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3 Sheets-Sheet 3



Inventor
C. G. Richardson
by Geo. N. Goddard,
Attorney

UNITED STATES PATENT OFFICE

CHARLES G. RICHARDSON, OF SPRINGFIELD, VERMONT, ASSIGNOR TO PARKS & WOOLSON MACHINE COMPANY, OF SPRINGFIELD, VERMONT, A CORPORATION OF VERMONT

MACHINE FOR APPLYING TRANSFER STAMPS

Application filed March 15, 1929. Serial No. 347,293.

This invention relates to machines for transferring decalcomania stamps to cloth or fabric and is intended to provide certain improvements in the type of machine set forth in my pending application for United States Patent Serial No. 225,784, filed October 12, 1917.

These machines are intended for the rapid and convenient hot pressing of decalcomania stamps upon a fabric passing over a revolving drum, with whose periphery it has frictional contact, and which drum is provided with a heated bed or platen and with appropriate tape feeding mechanism coordinated with the revolution of the drum and with a revolving presser cooperatively arranged in opposition to the platen so that at regular intervals on the cloth the design or trademark, embodied in each stamp carried by the stamp tape, is hot pressed near the edge of the fabric travelling over the drum.

In practice it is found that the decalcomania stamps constituting the design or trademark being pressed on the cloth are not always exactly evenly spaced on the carrier tape on which they are placed for use. This may be due to irregularities in spacing of the stamps on the carrier tape, or it may be due to changes of length of the tape due to varying atmospheric conditions. In the machine of my earlier application it was found that when, owing to either of these causes, some of the transfer stamps failed to properly register with the revolving presser only a partial impression or perhaps no impression at all of the stamp would be made on the cloth, and it became necessary to stop the machine to readjust the tape and the feeding mechanism.

The present invention overcomes this difficulty by providing means for advancing or adjusting the carrier tape on which the transfer stamps are placed while the machine is in full operation. As the operator stands in front of the machine, he will readily see whether the stamps are being applied at a proper distance from the edge or selvage of the cloth and whether the full design of the stamps is being applied properly, as will be the case when the successive stamps register

with the overhead revolving presser, and can readily correct any lack of registration by manually controlled means operating to advance the tape to proper position to allow the successive stamps to be fed to proper position over the heated platen and beneath the revolving presser.

Another feature of improvement resides in the construction and arrangement by which the drawing off and delivery of the stamp-carrying tape is effected.

These and other features of the present invention will be particularly described in the following specification and will be defined in the claims hereto annexed.

In the accompanying drawings I have illustrated preferred forms of construction and arrangement embodying the principles of this invention, in which

Fig. 1 is a plan view showing the revolving cloth drum with the top of its periphery removed to expose the working mechanism carried inside the drum.

Fig. 2 is a rear elevation of the mechanism shown in Fig. 1.

Fig. 3 is a front elevation of the drum showing the arrangement of the actuating mechanism by which the tape feeding means is controlled.

Fig. 4 is an end elevation showing part of the actuating mechanism at the left hand end of the drum (Fig. 3) and the overhead revolving presser in position for pressing a stamp against the heated platen.

Fig. 5 is an end elevation of the differential speed actuating shaft of the tape stripping mechanism.

Fig. 6 is a detail view showing in plan the construction of this differential stripper actuating shaft.

Fig. 7 is a rear end elevation of the mechanism shown in Fig. 6.

Fig. 8 is an end elevation of the ratchet and pawl mechanism for driving the stripper actuating shaft.

Fig. 9 is a detail in end elevation showing the means for positioning or adjusting the stamp-carrying tape while the machine is in operation.

As the general construction and arrange-

ment of this machine is similar to that described in my aforesaid earlier application, I will herein only briefly describe the features common to both applications, leaving for
 5 specific description the new construction and arrangements which constitute the present improvements.

As in my former application the machine comprises, generally speaking, a revoluble
 10 cylinder or drum A rotatably supported at its opposite ends by stub shafts 1 and 1^a, the peripheral shell being truncated or cut away to expose a flat heated platen or bed 2 in line
 15 with a preliminary heating plate 3, over which the carrier tape α , that is provided at short intervals with transfer stamps of the usual gummy character, is drawn to bring
 20 successive stamps to the middle portion of the platen 2 underneath the cloth and against which the cloth is pressed by the revolving
 25 presser foot 8 pivotally mounted on the revoluble arm 7 secured to the overhead countershaft, that is driven in coordination with the drum by means of the gear 5 intermeshing with the gear 4 secured to the outer end of the stub shaft 1, which is located at what may be termed the actuating end of the machine or drum.

The tape feed, of course, must be so coordinated with the revolution of the drum that
 30 at each revolution of the drum, at the point where the platen 2 meets and is pressed by the presser member 8, each successive transfer stamp will be positioned in registry with both
 35 pressing elements so as to impress or transfer the stamp to the superimposed portion of the cloth during the brief period that the presser and the platen revolve in pressing relationship to each other. It must be borne in
 40 mind that the cloth travels circumferentially around the drum with one edge portion between the paths of revolution of the two presser elements, while the tape carried inside the drum is fed axially or lengthwise of the drum,
 45 that is at substantially right angles to the travel of the cloth. Now, no matter how accurately the tape feeding means may be adjusted if, as frequently happens, the transfer stamps carried by the tape are not uniformly
 50 spaced apart, it may happen that the stamp, instead of coming to rest after its intermittent feeding motion exactly in registry with the revolving presser foot, may be partially or wholly offset lengthwise of the drum with
 55 relation to the presser and therefore will only be partly impressed upon the fabric, or may not be impressed thereon at all.

As the operator of the machine is watching the cloth as it passes over the drum, he can
 60 readily notice any tendency of the stamp impressions to become offset so as to be impressed too near the edge of the fabric, or not to be transferred at all by reason of failure to register at all with the presser member.

65 Therefore, I have herein made provision for

rectifying this fault by providing mechanism which can be operated by the attendant when the machine is running to advance the tape so as to secure proper positioning or registry of the successive stamps with the correct
 70 pressing position as often as such correction may be needed.

As in my earlier application the stamp carrying tape α is wound in a coil or spool and placed on a revoluble reel 10 mounted inside
 75 the drum somewhat toward the middle of the drum. As shown in Fig. 2, the tape α uncoiling from the revoluble reel passes over a transverse guide bar 11, thence around a stripper comprising a transverse roller parallel to the axis of the tape reel mounted in
 80 parallel arms 13 secured to a rock shaft 14, the actuation of which will be presently described. From the stripper the tape α passes over and around feed roll 30 and coacting idler feed roll 31, whence it is drawn across the hot plates 3 and 2 by a pair of corrugated draft rolls 50, which deliver the waste
 85 end of the tape, whose stamps have been impressed on the fabric, into a waste receptacle formed in the adjacent end of the drum from which it may be removed from time to time, through a hand hole, by the operator. The
 90 draft rolls 50 are driven as in my former application by an actuating gear 51 mounted on the end head of the drum and rotating about a transverse axis by reason of its toothed engagement with a helical cam 52 encircling the cylindrical box 53, in which the end shaft 1
 95 of the drum is mounted. This worm cam 52 is so proportioned that as the gear 51 is carried one revolution around it the gear is moved one tooth with a pause or momentary dwell at the middle part of the revolution caused by making this portion of the worm cam flat or without oblique inclination, as shown at 52^a. By
 100 a suitable train of mechanism embracing intermeshing pinions 54, 54^a, and a frictionally connected sprocket 55, the short sprocket chain 56 having a frictional drive connection with an overhead countershaft 57 carrying a pinion 58 intermeshing with a pinion 59 on
 105 the end of one of the intermeshing draft rollers 50, these draft rollers are given a rotation sufficient to keep the advanced end of the tape drawn taut over the pressing bed 2. The frictional connections in this train of gearing just described are for the purpose of allowing the
 110 draft rollers to run at a higher surface speed than is desired for the travel of the tape without breaking the tape, as would happen in such case if the driving train exerted a positive drive on these draft rolls. This insures preventing any slack of the tape, while keeping it stretches out flat in proper position
 115 for the transfer operation.

Instead of driving the tape delivering or feeding mechanism that regulates or controls the rate of delivery of the tape to transfer
 120 position on the platen through the same train
 125
 130

of mechanism that drives the rolls as in my earlier application, I herein provide means actuated independently of the draft roll mechanism for feeding or delivering the tape to the platen, which means will now be described.

Inside of the end frame B, which carries the fixed tubular box or housing 53 on which the worm cam 52 is mounted and secured, I mount a rotatably adjustable spur gear 32 that is compounded with a sprocket wheel 33 connected by a sprocket chain 33^a with a small sprocket pinion 34 mounted on a short shaft that is provided with a hand wheel 35, by which the operator can adjust the spur gear 32 circumferentially. On this shaft is secured a perforated dial disk 36, whose dial holes may be brought in registry with a stop pin 37 carried by the frame B so that the adjusting sprocket 34 may be set to any desired rotative position and releasably locked there against accidental displacement.

It will be understood that this spur gear is normally stationary, but that it causes rotation of a pinion 37^a mounted on the adjacent end of a feed actuating or transmission shaft 38 extending longitudinally of the drum and having driving connection with the shaft of the feed roll 30 through a worm and gear connection at 39. Except for the driving means just described, the feed or delivery rolls 30, 31 are constructed and arranged as described in detail in my aforesaid pending application.

On the feed roll shaft 40 is secured a sprocket 41, that transmits the rotation of the feed roll to a counter-shaft 42 by means of a sprocket wheel 43, which is secured to a tubular shaft 44 surrounding the shaft 42. As shown in Figs. 6 and 8, rotary motion transmitted to the tubular shaft or sleeve 44 by the sprocket wheel 43 is normally transmitted to the inner shaft 42 by means of pivoted pawls 45 arranged in pairs on the side of the sprocket wheel 43, which pawls normally engage a ratchet wheel 46 that is secured to the inner shaft 42.

On the opposite end of the shaft 42 is a sprocket wheel 60 that transmits rotary motion from this shaft to the revoluble reel 10 by means of a sprocket chain 61 and sprocket wheel 62 on the end of the reel shaft, so that through the normal driving connection the reel is slowly rotated to release from the coil or spool tape that is taken up by the stripper 12, 13. To avoid an over-delivery of tape from the reel to the stripper, this normal rotation is somewhat slower than the amount of tape delivered by the feed regulating rolls 30, 31, with the result that the stripper roller 12 is gradually advanced in a forward direction toward the reel against the tension of the contractile spring 16^a, which normally tends, through the link and lever connections 15, 16, to pull the stripper yieldingly away

from the reel to draw or strip off from the reel predetermined lengths of tape.

Therefore, to compensate for the relatively slower rotation of the reel in delivering tape to the stripper provision is made for speeding up or accelerating the unwinding rotation of the reel, as often as it may be needed. This accelerated action is accomplished by an alternating drive connection between the sleeve or tubular shaft 44 and the inner shaft 42, which will now be described.

Since the shaft 42 is driven through the ratchet and pawl connection from the sprocket 43, it will be obvious that if the shaft 42 is accelerated its ratchet wheel 46 can readily overrun the pawls 45 without interfering with the normal rotation of the sprocket 43. Referring more particularly to Figs. 6 and 7, there is shown loosely mounted on the sleeve 44 a ratchet wheel 47 alongside of a pinion 48, that is keyed to the sleeve 44 to revolve in unison therewith. The pinion 48 meshes with a pinion 47^a that is secured to a short spindle or shaft 47^b rotatably mounted in the ratchet wheel 47 near its periphery and carrying at its opposite end a pinion 47^c meshing into a pinion 42^a that is fast on the shaft 42. A pawl 47^d is pivotally mounted on a bracket carried by the drum (Fig. 7) in position to engage the teeth of the ratchet 47 so as to hold the ratchet against rotation. So long as the ratchet is free to revolve with the sleeve 44 and the pinion 48 that is splined to said sleeve, there will be no independent rotation of the planetary pinions 47^a and 47^c, so that this whole planetary movement, comprising the pinion 48, the pinions 47^a and 47^c, simply revolves with the sleeve 44. When, however, the ratchet 47 is engaged and held by its pawl 47^d against rotation, then the relative rotation of the pinion 48, working through the speed accelerating pinions 47^a, 47^c, operates to rotate the shaft 42 considerably faster than the sleeve 44 rotates. As this acceleration of rotation is required only occasionally and should cease as soon as the stripper has returned to rearward or maximum drawing off position, I provide a knock-off for throwing the pawl 47^d out of engagement with the ratchet 47. This knock-off member comprises a polygonal cam 49 fast on sleeve 44, whose high portions or corners, when engaging a roller 47^e carried by, and laterally offset with relation to, the pawl 47^d serves to swing the pawl out of engagement with the ratchet 47 where it is latched against re-engagement by means of the trip latch 17^a, which is normally thrown into latching position by the contractile spring 17^b.

The ratchet holding pawl 47^d is released from the latch 17^a whenever the stripper advances far enough forwardly toward the reel to advance the link 17 far enough to release this latch 17^a, there being provided a slot at

17^c to give a certain amount of lost motion between the link 17 and the latch member 17^a. In this advanced position of the stripper with the link 17 thrusting against the latch 17^a, the latch 17^a is held in released position against its return spring 17^b until the stripper has moved rearwardly drawing off the tape that has been simultaneously released or uncoiled by the accelerated rotation of the reel already described.

It will therefore be seen that adequate provision is made for preventing an excess unwinding of the reel by giving it an unwinding motion too slow to supply the requirements of the feed delivering rolls, while at the same time provision is made for accelerating the unwinding of the tape from the reel as often as the stripper approaches its forward position where all the slack taken up has been paid out.

To summarize, the cloth engaging drum rotates continuously while engaged by the cloth travelling around its periphery, while the tape feeding means acts intermittently to deliver properly regulated lengths of tape to the transfer point or position, the delivery of this tape being controlled by the feed regulating or delivering rolls, which are properly supplied with the stamp carrying tape under light tension from the stripper through the agency of the differential speed reel rotating mechanism. The used end of the tape beyond the transfer point is kept taut by the pull of the draft rolls which, however, are driven by an actuating mechanism that is independent of the tape delivering mechanism, thus allowing the tape delivery to be accelerated by the operator while the machine is running through the medium of the adjusting wheel 35 interconnected with the normally stationary but rotatably adjustable spur gear 32.

It will be seen that while the unwinding of the tape reel is intermittently and automatically accelerated, the feed rolls deliver a uniform length of tape according to their adjustment, unless they are accelerated by the attendant through the adjustment or manual advancement of the actuating spur gear in order to effect proper positioning or registry of the successive transfer stamps with the transferring or pressing members. Therefore, by merely watching the line of successive stamp impressions near the edge of the cloth after the cloth leaves the drum the operator can always maintain proper stamp positioning above the platen without even slowing down the machine.

What I claim is:

1. A machine for applying transfer stamps to fabric embracing a cloth engaging revoluble drum, coacting revoluble presser elements for impressing an interposed transfer stamp against an interposed piece of fabric, means coordinated with the drum to inter-

mittently feed a stamp carrying tape over one of said presser elements, and means controlled by the operator while the drum is revolving to adjust the tape to cause the stamps thereon to be properly positioned with relation to the presser elements.

2. In a machine of the class described, the combination with a revoluble cloth engaging drum having a peripherally disposed pressing platen, means for intermittently delivering to the platen predetermined lengths of a stamp bearing tape as the drum revolves, and manually operable means for advancing the tape being fed to the platen in order to position the tape being fed to bring its stamps into registry with the correct transfer position on the platen.

3. In a machine of the class described, the combination of a revoluble cloth engaging drum having a pressure resisting platen for supporting a transfer stamp in proper position to be transferred to the cloth travelling over the drum, means for feeding predetermined lengths of tape intermittently over the platen to bring the transfer stamps on the tape successively into position for transfer to the cloth, a stationary feed actuating member arranged to transmit actuating movement to the feed mechanism when the drum is revolving, and means for adjusting said stationary actuating member while the drum is rotating, thereby advancing the stamp bearing portion of the tape to correct transfer position.

4. In a machine of the class described, the combination of a revoluble cloth engaging drum, mechanism mounted in said drum for intermittently feeding predetermined lengths of stamp bearing tape to transfer position lengthwise of the drum, a gear mounted independently of the drum and having actuating connection with the tape feeding mechanism by which the tape is intermittently advanced through the rotation of the drum, and manually operable means for advancing the feed of the tape to cause the transfer stamps thereon to be correctly positioned for transfer to the cloth travelling over the drum.

5. In a machine of the class described, the combination with a revoluble cloth engaging drum having a platen for supporting a transfer stamp and the cloth to be stamped in position for transferring the stamp to the cloth, means for intermittently feeding to the platen predetermined lengths of a stamp bearing tape as the drum revolves, draft rolls on the opposite side of said platen for keeping said tape taut across the platen, and independent transmission means actuated by the revolution of the drum to operate the tape delivering means and the draft rolls.

6. In a machine of the class described, the combination with a revoluble cloth engaging drum having a pressure resisting platen for supporting an overlying transfer stamp and

an edge portion of the cloth, intermittently acting delivery rolls arranged to deliver a predetermined length of stamp bearing tape to the platen, draft rolls for drawing the forward end of said tape over the platen and keeping it taut, a stationary member arranged to cause actuating movement of the draft rolls when the drum is revolving, another stationary member arranged to have actuating connection with the feed rolls to operate the feed rolls when the drum is revolving independently of the draft rolls.

7. A machine for applying transfer stamps to fabric, embracing a cloth-engaging revolvable drum, co-acting revoluble presser elements for impressing an interposed transfer stamp against the interposed portion of a piece of fabric, feed rolls coordinated with the drum to intermittently feed a stamp-carrying tape over one of said presser elements, means for maintaining an equalizing tension on said tape in advance of the feed rolls, and means under the control of the operator while the drum is revolving to adjust the tape and thereby cause the stamps thereon to be properly positioned with relation to the presser elements.

8. A machine for applying transfer stamps to fabric, embracing a cloth-engaging revolvable drum, co-acting revoluble presser elements for impressing an interposed transfer stamp against an interposed piece of fabric, feed rolls coordinated with the drum to position successive stamps on a stamp-carrying tape on one of said presser elements, and tensioning means arranged to engage the tape in advance of the feed rolls and also beyond the presser element, and actuating means for driving said feed rolls having adjustment adapted to be controlled by the operator while the drum is revolving to alter the positioning of the stamps on the presser.

9. In a machine of the class described, the combination with a revolving drum carrying a presser platen, tape feeding means embracing feed rolls in advance of the platen and draft rolls beyond the platen, each driven independently by the revolution of the drum, and means under the control of the operator for advancing or retarding the feed rolls without affecting the position of the draft rolls in order to cause successive stamps on the tape to properly register with the platen.

In witness whereof, I have subscribed the above specification.

CHARLES G. RICHARDSON.