To all whom it may concern:

Be it known that I, Harry H. Konerman, a citizen of the United States of America, and a resident of Newport, in the county of Campbell and State of Kentucky, have invented a new and useful Improvement in a Friction Device for Autographic Registers, of which the following is a specification.

An object of my invention is to provide a positive winding mechanism for the record sheet of autographic registers, together with means to preclude speeding of the record sheet as it passes thru the device.

Another object of my invention is to provide a device for the purpose stated, adapted to roll the record sheet into a solid compact roll.

Another object of my invention is to provide a simple and efficient device for the purposes stated.

These and other objects are attained by means described herein and disclosed in the accompanying drawings, in which:

Fig. 1, is a perspective view of an autographic register embodying my invention.

Fig. 2, is an enlarged sectional view on line 2—2 of Fig. 1.

Fig. 3, is a sectional view on line 3—3 of Fig. 2.

Fig. 4, is a fragmental perspective view showing the operating mechanism of a device embodying my invention.

Fig. 5, is a sectional view on line 5—5 of Fig. 4.

The register 8, comprises a suitable casing which may be of any type and form generally employed. The side walls 7 and 9 of the casing have revolubly mounted upon them rolls of paper 9, 10 and 11, which paper is adapted to be fed over a plate 12, disposed below the aperture 13 in the top 14 of the device.

The rolls of paper are made up of longitudinal strips of paper which are fed between the plate 12 and the top 14, by suitable friction rollers 15, 16 and 17, mounted on the drive shaft 18, cooperating with rollers 19, 20 and 21, respectively carried by the driven shaft 22. The shaft 18 and 22 carry intermeshing gears 23 and 24.

The roll of paper 11 constitutes a record sheet upon which is made a carbon copy of the notations upon the sheets extending over rolls 9 and 10. The strip of paper 28, extending from the record roll, passes between the rolls carried by the drive and driven shafts, and passes over rollers 26, 27 and 28 in the manner shown in Fig. 2, and is then wound upon a collecting roll 29 removably mounted upon the sides of the casing. The winding or collecting roll 29 carries a gear 30 in engagement with an idler gear 31, which meshes with a gear 32, revolutely mounted upon the drive shaft 18.

A friction device comprises a collar 33, mounted on the shaft 18, adapted to revolve with the shaft 18 and capable of a limited lateral movement on the shaft 18, a washer 34, carried by the collar 33, adapted to frictionally engage the gear 32 and a spring 35, having its opposite ends in abutment upon the collar 33 and the roller 15. The limited lateral movement of the collar 33 is attained by providing an elongated slot 36 in the hub 37 of the collar 33, in which is slidably contained a pin 38 carried by the shaft 18. The washer 34 is preferably of fiber or a similar material adapted to bind upon gear 32 under the influence of the spring 35, yet capable of permitting the gear to slip or slide in relation to itself.

The rollers 26 and 23 have fixed axes. The roller 26 is fixedly secured between the sides of the casing. The roller 23 is revolutely mounted between the sides of the casing. The roller 27 has its end bearings 39 slidably and revolutely contained in the elongated slots 41, formed in the sides of the casing, whereby the roller 27 is capable of a limited movement toward and away from the rollers 26 and 28. The means whereby the collecting roller 29 is detachably mounted upon the register, comprises a substantially V-shaped plate 43 in the apex of which, one end of the shaft 44 may engage. The shaft 44 carries a roller 29. The shaft 44 is held in position upon the plate 43 by means of a catch 45 pivotally mounted upon the plate 43 and having a hooked lower end 46 adapted to extend between the branches 47 and 48 of the plate 43, thereby providing a confined bearing on the plate 43 for the shaft 44. The other end of the shaft 44 is revolutely mounted upon a block 49, carried by a pin 50 extending thru a housing 51 mounted upon one of the sides of the register, and within which housing is contained a spring 52, which spring yieldingly retains the block 49 in engagement upon the shaft 44.
pin 50 carries a head 53 provided with a slot 54 adapted to receive a pin 55 carried by the housing 61, the head 53 providing means for moving the block 49 against the yielding resistance of the spring 52, the pin 55 serving to preclude rotatory motion of the head 53 and the block 49, and also serves as a means for retaining the head 53 in the position shown in dotted lines in Fig. 5, to facilitate mounting and demounting of the roller 29. The roller 29 is provided with a suitable catch or clamp 56, adapted to secure the end of the strip 25.

The operation of my device is as follows:

The several strips of paper extending from the rollers 9, 10 and 11, are fed between the rollers carried by the drive and driven shafts in any of the manners common in the art. It is customary in automatic registers to provide three records of the transaction recorded upon the device. Two of the records are detached from the register and the third is rolled upon the collecting roller 29. At the time when the several sheets are being passed between the rollers carried by the drive and driven shafts, the collar 33 revolves with the shaft 18 and the friction device, carried by the shaft 18, tends to impart rotatory motion to the collecting roller 29, thru the idler gear 31. Should it be that the strip of paper 25 is being fed between the feeder rollers carried by the drive and driven shafts, at a slower rate of speed than that at which the collecting roller 29 is re-rolling the strip, the controlling rollers 26, 27 and 28 are brought into binding relation upon one another, thereby precluding the roller 29 from pulling the sheet 25 to such extent, that the relationship, between the sheets of paper passing between the feeder rolls, is in no way affected. The binding of the controlling rollers is effected by the roller 29 pulling that portion of the strip of paper 25 extending between the roller and the collecting roller, at a faster rate of speed than do the feeder rollers feed the strip 25, wherefore the roller 27 moves upwardly and binds upon rollers 26 and 28.

As the strip 25 is fed between the feeder rollers, the loosening in the strip 25 between the feeder rollers and the control roller 27, will permit rotatory motion of the control roller 27, to such extent that an equal amount of the strip 25 will pass to the roller 28 and thereby permit the same amount of the strip 25 to be rolled upon the collecting roller 29. The difference in the speeds at which the collecting roller can rewind the sheet 25, and at which the control rollers feed the sheet 25, is compensated by the relative slipping of the collar 33 and the gear 32. The friction device permits a difference in the rates of speed at which the drive shaft 18 and the collector roll shaft 44 may revolve. The forward end of the register carries suitable bearing or idler rollers 57, 58 and 59, about which the strips of paper extending from rollers 9, 10 and 11 pass. The intermediate bearing 58 has a reduced portion 60, preferably near the center thereof, and carries about said reduced portion a strip of paper 25, adapted to bear upon the strip of paper 25 and to yieldingly retain the strip of paper 25 in engagement upon the roller or bearing 57. The bearings 57, 58 and 59 are preferably non-rotating, whereby there is attained a check or retaining action upon the strip of paper. The spring 61 serves as an auxiliary check, and precludes the strip 25 from being moved through the feed rollers by any action of the collecting roller at those times when the perforations with which the strips of paper are provided, register with the feed rollers. It is customary to provide registers employing perforated sheets of paper with a suitable starting mechanism 62, whereby the slots in the sheets of paper may be moved from registration with the rollers 19 and 21, in order to start the feed of the strips of paper between the feed rollers. A mechanism for the purpose last referred to constitutes no part of my invention and whereas any suitable mechanism for this purpose may be employed, for example such as disclosed in my Patent 1,316,581, no further description thereof is given herein.

What I claim is:

1. In a device of the class described the combination of a drive shaft, means actuated by the drive shaft for feeding strips of paper, a collector roll adapted to receive a strip of paper from feeding means, means to impart motion to the collector roll, a friction device adapted to transmit motion from the drive shaft to the last mentioned means, and control rollers adapted to operate upon the strip of paper intermediate the feed means and the collector roll and comprising one roll having a fixed sliding surface over which the strip of paper may pass, a second roll revoluably mounted adjacent the first roll, and a third roll rotatably and reciprocably mounted in relation to the first and second rolls, the first roll receiving the strip of paper from the feed means, the third roll receiving the paper from the fixed surface of the first roll and the second mentioned roll receiving the strip from the third mentioned roll, the third mentioned roll being adapted to bind the strip of paper upon the first and second rolls whereby to preclude the transmission of motion thru the friction device when the collector roll tends to move at a rate of speed such as to receive the strip of paper at a rate of speed in excess of the feed of the strip.

2. In a device of the class described the
combination of a drive shaft, means actuated by the drive shaft for feeding a strip of paper, a collar mounted on the drive shaft adapted to revolve therewith and capable of movement longitudinally of the drive shaft, a gear revolubly mounted on the drive shaft, means yieldingly retaining the collar in frictional driving engagement upon the gear, a collector roll adapted to be driven from the gear and to receive a strip of paper from the feeder means, and means adapted to operate upon the strip of paper intermediate the feeder means and the collector roll adapted to bind upon the paper whereby independent relative movement of the collar and the gear may be attained.

3. In a device of the class described the combination of a drive shaft, means actuated by the drive shaft for feeding a sheet of paper, a collar adapted to revolve with the drive shaft and capable of movement longitudinally of the drive shaft, a gear revoluably mounted on the drive shaft, a spring yieldingly retaining the collar in frictional engagement upon the gear, a collector roll driven from the gear and adapted to receive the sheet of paper from the feed means, and a control device adapted to operate upon a strip of paper intermediate the feed means and the collector roll and comprising a revoluble roller having a fixed axis, a second revoluble roller, and a binding means having a fixed face adapted to receive a strip of paper from the feeding means and over which face the strip of paper may slide, the second revoluble roller being capable of reciprocation toward and away from the first roller and binding means, the reciprocating roller receiving the strip of paper from the binding face, the first mentioned roller receiving the strip of paper from the reciprocating roller, the collecting roller receiving the strip of paper from the first mentioned roller, the reciprocating roller being adapted to bind the strip of paper between the binding means and the first mentioned roller, when the collector roll tends to receive the strip of paper at a rate of speed in excess of the feed means, whereby the gear and the collar may be given differential speeds.

In testimony whereof, I have hereunto subscribed my name this 31st day of July, 1922.

HARRY H. KONERMAN.