April 21, 1925. 1,534,464

J. P. RENZ

MACHINE FOR FEEDING SHEET MATERIAL

Filed March 5, 1923 4 Sheets-Sheet 1

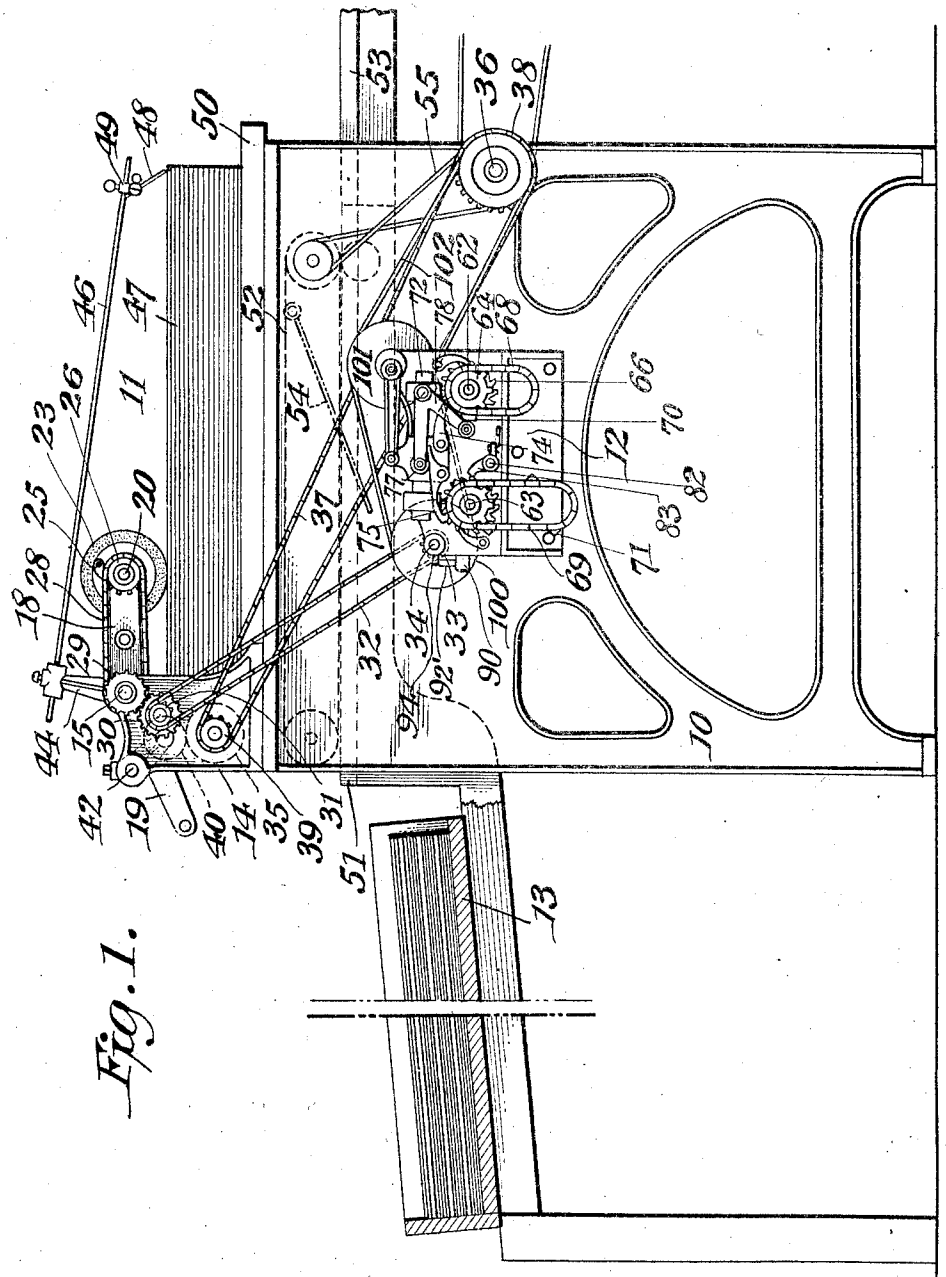


Fig. 1.

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MACHINE FOR FEEDING SHEET MATERIAL

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Fig. 2.

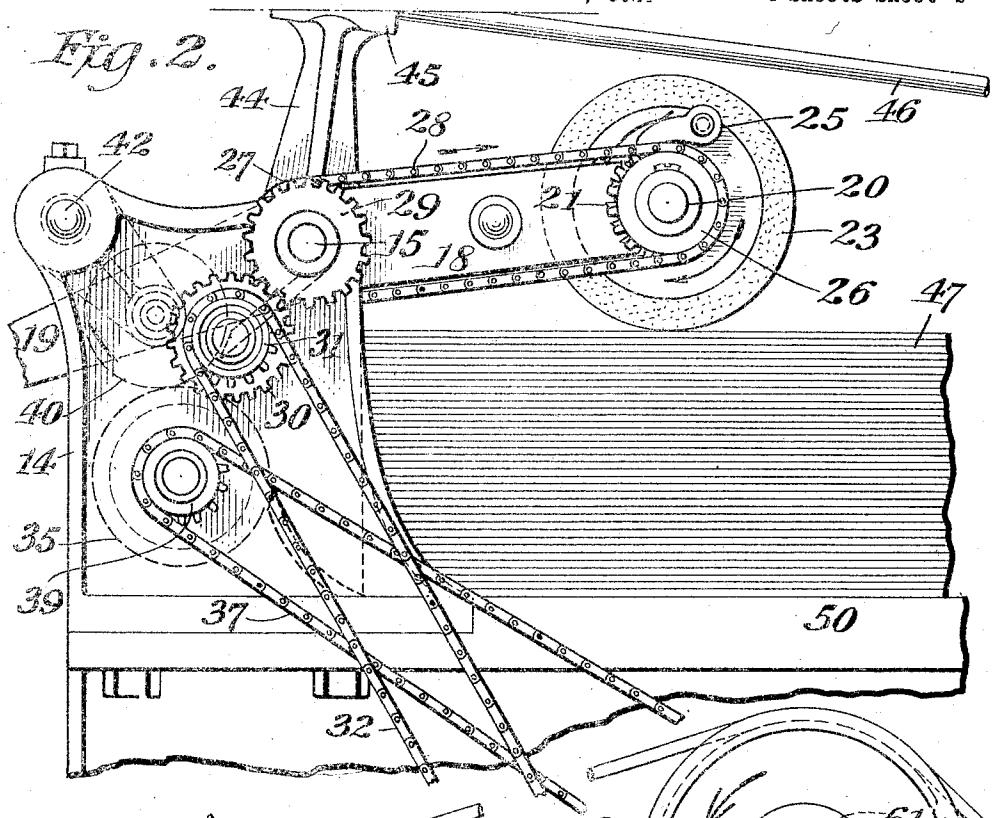
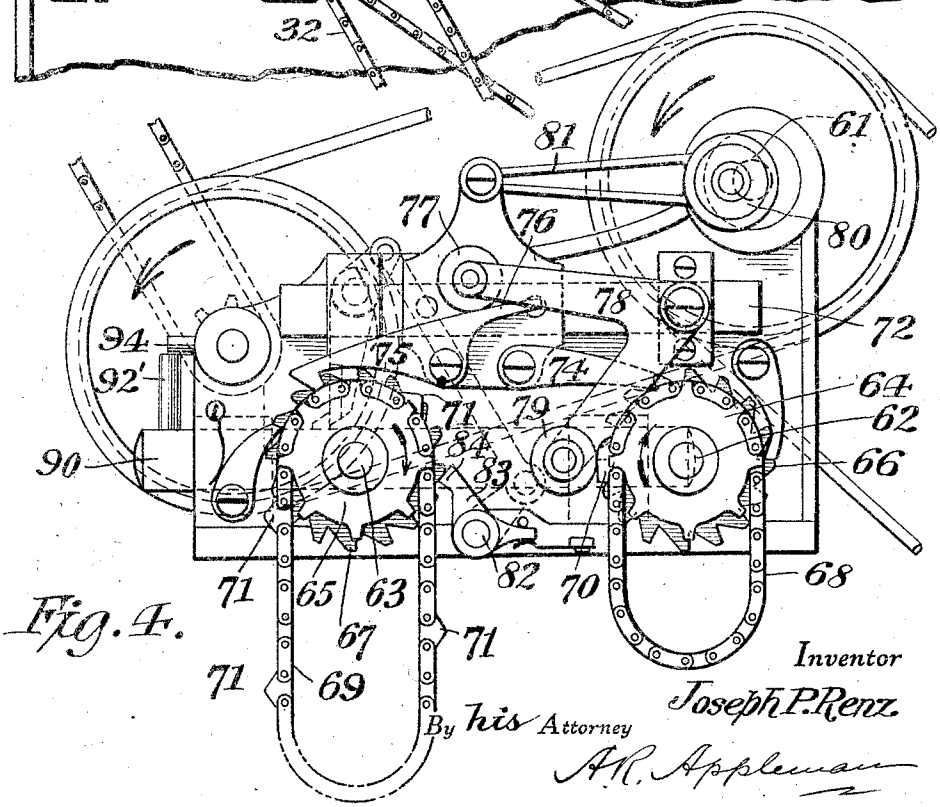


Fig. 4.



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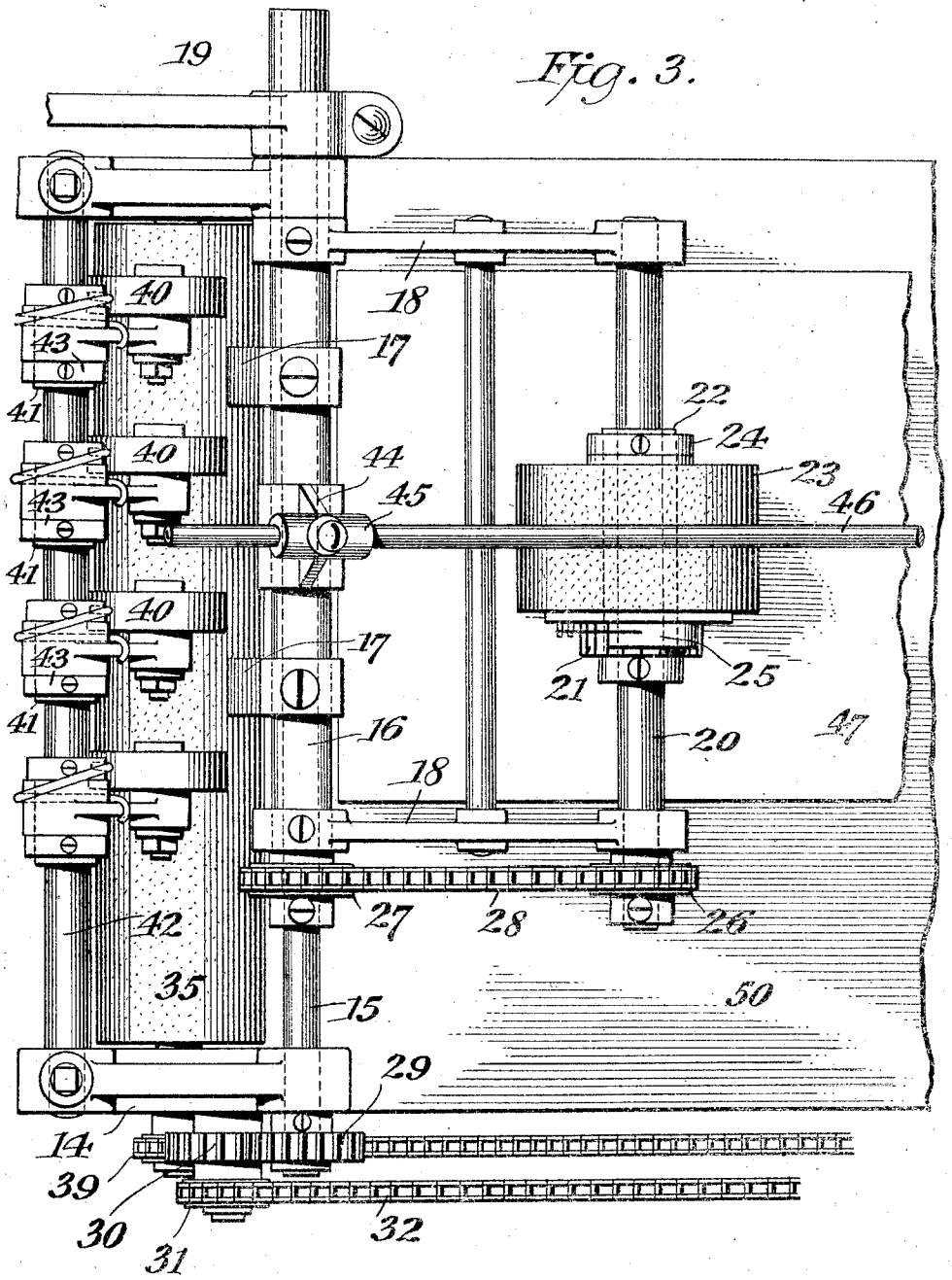
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MACHINE FOR FEEDING SHEET MATERIAL

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Fig. 3.



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MACHINE FOR FEEDING SHEET MATERIAL

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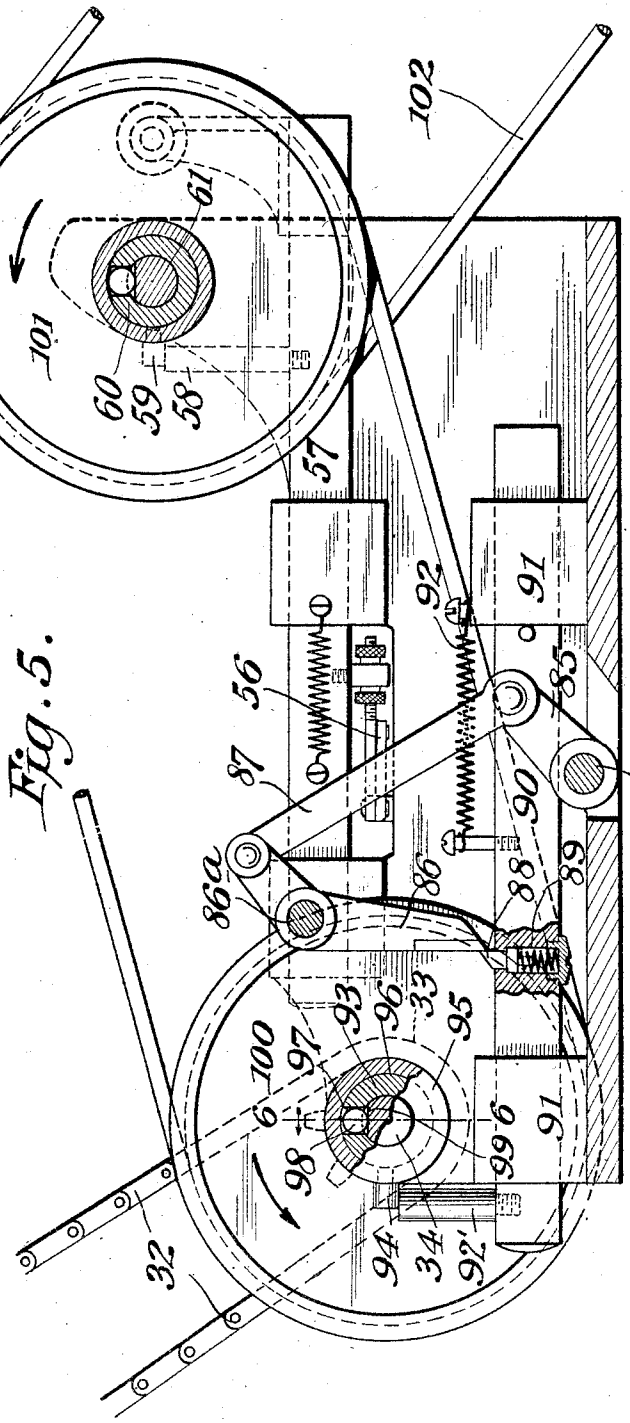


Fig. 5.

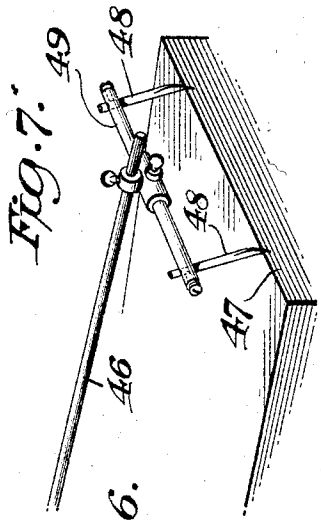


Fig. 7.

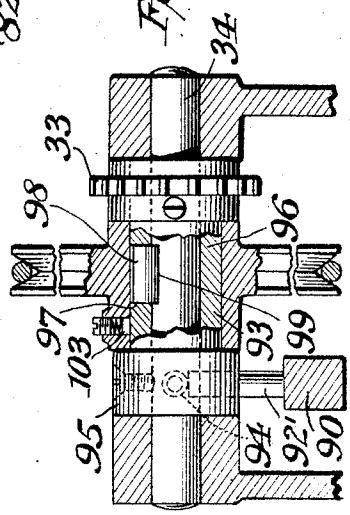


Fig. 6.

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Patented Apr. 21, 1925. 1,534,464

UNITED STATES PATENT OFFICE.

JOSEPH P. RENZ, OF BROOKLYN, NEW YORK.

MACHINE FOR FEEDING SHEET MATERIAL.

Application filed March 5, 1923. Serial No. 622,906.

To all whom it may concern:

Be it known that I, JOSEPH P. RENZ, a citizen of the United States, and resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Machines for Feeding Sheet Material, of which the following is a specification.

My invention relates to a machine for feeding sheet material, the object being to provide a machine of the above described class adapted to be operated by, and preferably positioned above, a sheet counting machine such as the one shown and described in Letters Patent of the United States, issued to me February 1, 1921, No. 1,366,938, counter and stacker for sheet material.

A principal object of my present invention resides in the provision of automatic means, controlled and operated by the counting machine above identified, whereby relatively thick sheets of cardboard or other material, constituting the backs or covers of blank books or tablets, may be fed forward at predetermined intervals and dropped onto the superposed counted stacks of sheet paper as each successive stack is completed.

In the drawings similar reference characters are employed to designate corresponding parts throughout the views, in which:—

Fig. 1 is a side elevation of my improved machine arranged above and geared in connection with a counting machine.

Fig. 2 is an enlarged side view of the head portion of my machine.

Fig. 3 is a plan view thereof.

Fig. 4 is a side view of a counting machine and showing the automatic control for my feeding machine.

Fig. 5 is a sectional elevation of the counting machine, with parts omitted, and showing the counting and feed clutches and their connections.

Fig. 6 is a vertical cross section taken on the line 6—6, Fig. 5.

Fig. 7 is a perspective view of a holding device employed.

In the drawings 10, designates a supporting frame, carrying a feeding mechanism 11, a counting mechanism 12, and a lay board 13.

The feeding mechanism includes a frame 14, in which is mounted a shaft 15, carrying a sleeve 16, longitudinally adjustable thereon, and made fast to this sleeve are a pair of guide plates 17, a pair of forwardly directed arms 18, and a handle 19.

Revolubly mounted in the ends of the arms 18, is a cross shaft 20, on which is fixed a ratchet 21, having a sleeve extension 22, providing a bearing for a starter roller 23, held against longitudinal movement by a collar 24, made fast to the sleeve 22, and a pawl 25, engaging the ratchet is carried by the roller 23. Shaft 20, carries a sprocket 26, geared in connection with a sprocket 27, fixed on shaft 15, by a chain 28, and shaft 15 also has fixed thereto a gear 29 meshing with another gear 30, formed with a sprocket 31, connected by a chain 32, to a sprocket 33, on a clutch shaft 34, positioned in the frame of the counting machine 12.

Mounted in the lower part of the frame 14 is a feed roller 35, constantly driven from the power shaft 36, by a chain 37 passing over sprockets 38 and 39, and bearing on the feed roller 35 are a plurality of spring-pressed auxiliary feed rollers 40, loosely mounted on sleeves 41, fixed to a cross shaft 42, and held in place by collars 43, and by this construction the auxiliary rollers may be moved along the shaft 42, and fixed at any desired location.

Freely mounted on the sleeve 16, is a bracket 44, having an eye 45, to receive a rod 46, which ranges forwardly over the starter roller 23, and over the paper stack 47, and carries at its free end, a pair of holding knives 48, supported in an adjustable frame 49, the knives are so shaped that they penetrate the topmost sheet of the stack 47, at the end and enter the second sheet to an extent sufficient to hold the second sheet against movement while the first or top sheet is being drawn or fed back between the rollers 35 and 40.

The stack 47, of sheet material rests on a base board 50, which may be provided with suitable gauges (not shown) to accurately place the stack, before the feeding operations begin.

Arranged below the feeding mechanism 11, is a table 51, on which feed belts, indicated at 52, operate to convey paper sheets from the ruling machine table 53, backwardly and under a tripper finger 54, and onto the lay board 13, and this belt is driven from the power shaft 36, by a cross belt 55.

The tripper finger 54, operates and controls the counting mechanism 12, and is the same as that shown and described in the patent above identified and I will now describe its construction in a general way.

The tripper finger 54 rises and falls at each passage of a sheet of paper and operates a tripper mechanism (not shown) which in turn operates a bell crank lever 56, connected to a slidable bar 57, having a vertical stop pin 58, on which normally rests a clutch pin 59, controlling the counting machine clutch 60, carried on a shaft 61.

From one side of the counting machine project two stub shafts 62, and 63, on which are carried sprockets 64, and 65, made fast with ratchet wheels 66 and 67.

A counting control chain 68 is carried on the sprocket 64, and a feeding control chain 69 is carried on the sprocket 65, and said chains are provided with trip cams 70 and 71, respectively, but one of the former being shown and several of the latter, the arrangement of the cams as shown being that which is necessary to count stacks of one hundred sheets.

Slidably mounted above the stub shafts, is a slide bar 72, carrying a plate 73, to which is pivoted a push dog 74, engaging ratchet 66, and a pull dog 75 engaging ratchet 67, the latter dog has a tail-piece 76, on which rests a gravity roller 77, carried on a bell crank lever 78, and on the other arm of the bell crank lever is carried a roller 79, held in the path of the cam 70, so that at every complete travel of the chain 78, over its sprocket, the said cam will contact with roller 79 and rock the lever 78, on its pivot, thus raising the roller 77, from the tailpiece 76, permitting the pull dog 75 to drop into the teeth of the ratchet 67, as shown in Fig. 4.

An eccentric 80, is carried on shaft 61, to give reciprocating movement to the bar 72, through a pitman 81.

At the bottom of the counting mechanism I mount a shaft 82, carrying an arm 83, having a nose 84, normally lying in the path of movement of the cams 71. and at the other end, the shaft carries another arm 85, connected to a trip lever 86, by a link 87, the lever 86 is pivoted at 86ª and normally bears against a spring-pressed shoulder piece 88, mounted in a bore 89, formed in a reciprocating bar 90, mounted in bearings 91, and normally held in the position shown in Fig. 5, by a spring 92.

Carried on the shaft 34, is a feeding control clutch 93, similar in construction to the counting control clutch 60, and may be described as follows:

The bar 90, carries a vertical pin 92′, underlying a radial pin 94, carried on a sleeve 95, fixed to shaft 34, which sleeve has a reduced portion 96, slotted at 97, to receive a roller 98, normally lying on a flattened portion 99, of the shaft 34, as shown in Figs. 5 and 6, of the drawings, and freely mounted on the sleeve portion 96, is a constantly driven grooved pulley 100, over which a belt passes to a double pulley 101, on the shaft 61, which pulley in turn, is belted to the power shaft 36, as at 102.

The pulley 100 has an extension at one side, in which is placed a spring-pressed friction shoe 103.

The sprocket 33 is made fast to sleeve 95, and makes a full revolution each time the clutch is released.

In operation as the sheets to be counted are fed into the counting machine, one at a time, the gravity tripper finger is raised and drops as each sheet passes, the dropping action serves to release a tripper mechanism not shown here, but clearly shown and described in the patent above referred to, and as the tripper mechanism is released, it in turn releases the counting control clutch 60, permitting a full rotation of the shaft 61, and through pitman 81, operates bar 72, to rotate the ratchet 66 and sprocket 64, one step at each passage of a sheet and this step movement is continued until the cam 70, contacts with roller 79, of bell crank 78, raising the gravity roller away from tailpiece of pull dog 75, permitting it to drop into a tooth of ratchet 67, and at the next operation of bar 72, ratchet 67 is given a one-step rotation and when a cam 71, on chain 69, contacts with the nose on arm 83, shaft 82 is rocked to operate trip lever 86, forcing bar 90, to the left (see Fig. 5) forcing pin 92 out from under pin 94, releasing feed clutch 93, and permitting a full revolution of sprocket 33, which through chain 32, gears 29 and 30, and chain 28, revolves starter roller 23, forcing the topmost sheet of stack 47 backwardly between the constantly driven feed rollers 35, and 40, from whence the sheet is dropped onto a counted stack of paper lying on the lay board 13.

In describing the counting and feeding mechanism, it will be understood that a stack of any predetermined number of sheets may be counted before a cover or back sheet is deposited thereon, all depending upon the arrangement of the cams on the chains, and chains having different combinations are, of course, always at hand, so that the "count" of the machine may be changed in a minute by simply changing the chains.

It is thought the operation and utility of the machine will be apparent without further description, and it is understood that the structural elements shown are susceptible to such variations and modifications as fall within the scope of the appended claims.

Having thus fully described the invention, what I claim as new, and desire to secure by Letters Patent is:

1. A feeding machine of the class described disposed above and geared in connection with a counting machine, means carried by

the counting machine for releasing a feed control clutch and means for delivering a cover sheet from the feeding machine onto a stack of paper delivered from the counting machine when said clutch is released, said delivery means including devices to engage the two topmost cover sheets to hold the second one while the top one is drawn off.

2. A feeding machine including a base board, a frame thereon, a gravity starter roller, constantly driven feed rollers, and devices to engage the two topmost cover sheets to hold the second one when the top one is drawn off, in combination with a counting machine having a clutch and means for releasing said clutch when a predetermined number of sheets have been counted, to deliver a cover sheet from the feeding machine onto said counted sheets.

3. A feeding machine comprising a frame having a starter roller and feed rollers mounted therein, holding knives contacting with and penetrating the uppermost sheet and slightly entering the one below to hold it against movement while the top sheet is being drawn or fed backward through said rollers, in combination with a counting machine having means for operating the starter roller after a predetermined number of sheets have been counted to deliver a cover sheet from the feeding machine onto the said counted sheets.

4. A feeding machine of the class described comprising a base board supporting a stack of sheet material, a gravity starter roller resting thereon, a feed roller, auxiliary feed rollers bearing thereon, and devices to engage the two topmost back sheets to hold the second one while the top one is drawn off, in combination with a counting machine having means for operating the starter roller at a predetermined time to deliver a back sheet onto a stack of paper previously counted.

5. A feeding machine of the class described comprising a frame and supporting base for a stack of paper, a starter roller resting on said paper, constantly driven feed rolls, and devices to engage the uppermost back sheets to hold the second sheet when the top one is drawn off, in combination with a counting machine, a feed control chain, cams arranged at intervals along said chains and means controlled by said cams for operating the starter roller to deliver a back sheet from the feeding machine onto a counted stack of paper.

6. A feeding machine of the class described comprising a frame, a table to support a stack of paper, a starter roller resting on said paper, constantly driven feed rolls, and devices to engage the two topmost sheets to hold the second sheet when the top one is drawn off, in combination with a counting machine including a feed control chain having cams thereon, an arm in the path of travel of the cams and means controlled by the arm for operating the starter roller to deliver a sheet of paper from the feeding machine.

7. A feeding machine comprising a frame and a supporting board for a stack of paper, a feed roller, adjustably arranged spring-pressed auxiliary feed rollers bearing thereon, a starter roller resting on said paper stack, a pair of holding knives engaging the two topmost sheets of paper to prevent the second sheet from moving while the top one is being drawn off the stack, in combination with a counting machine having means for operating the starter roller to deliver a sheet from the feeding machine onto a counted stack of paper as described.

8. A feeding machine comprising feed rollers, a base board supporting a stack of paper and a starter-roller resting on said stack, and a pair of knives adapted to engage the two topmost sheets to hold the second sheet against movement when the top one is drawn off, in combination with a counting machine including a count control chain, a feed control chain operated thereby and having cams, a clutch and means controlled by the cams for releasing the clutch to operate the starter roller to deliver a sheet of paper from the feeding machine for the purpose specified.

In witness whereof I have signed my name in the presence of the subscribing witnesses this 25th day of January, 1923.

JOSEPH P. RENZ.

Witnesses:
WILLIAM E. CASSIDY.
THOMAS DOWD.