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C. F. TAYLOR.
MACHINE FOR BINDING TABLETS.
APPLICATION FILED JUNE 22, 1907.

Patented Feb. 14, 1911.

3 SHEETS—SHEET 1.

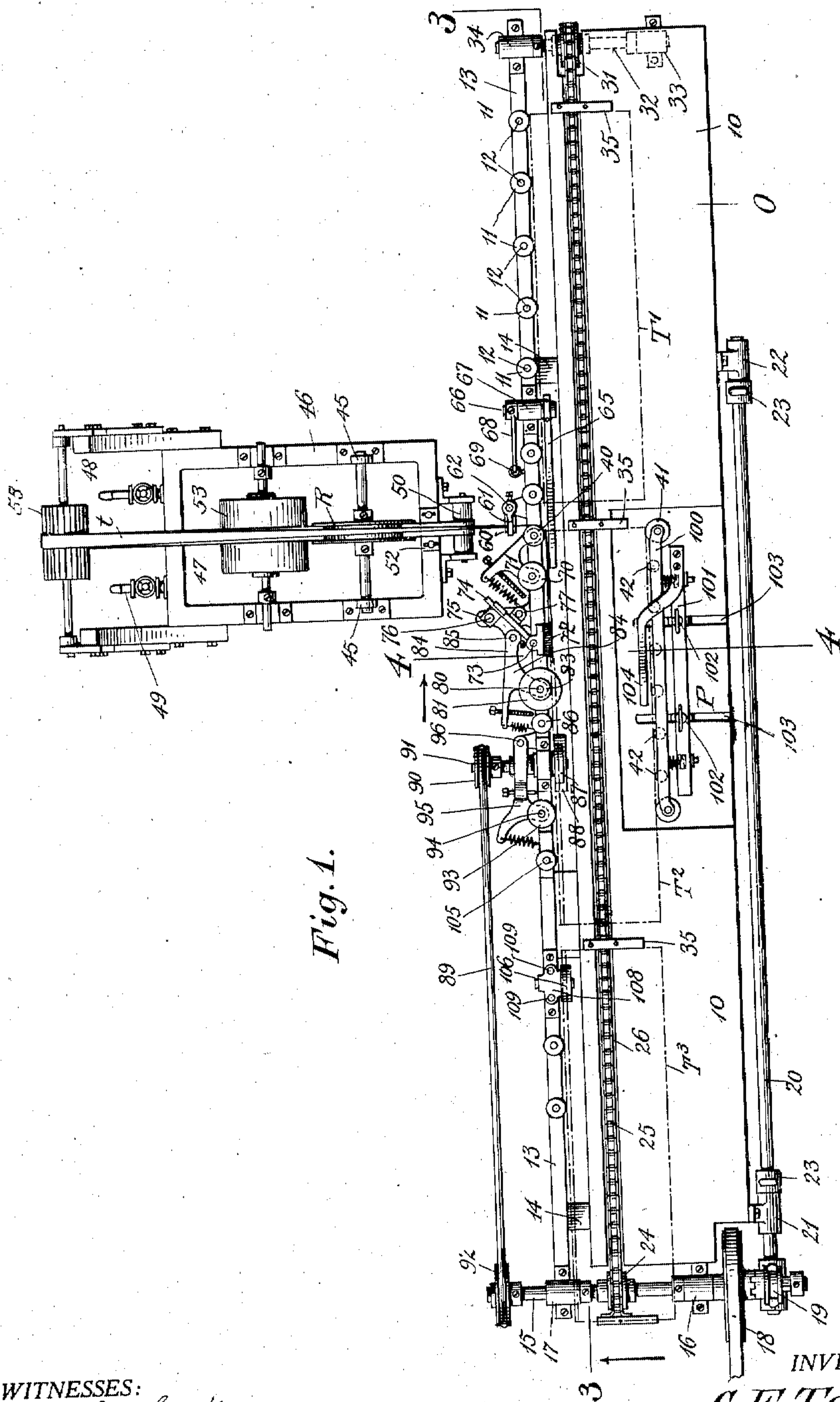


Fig. 1.

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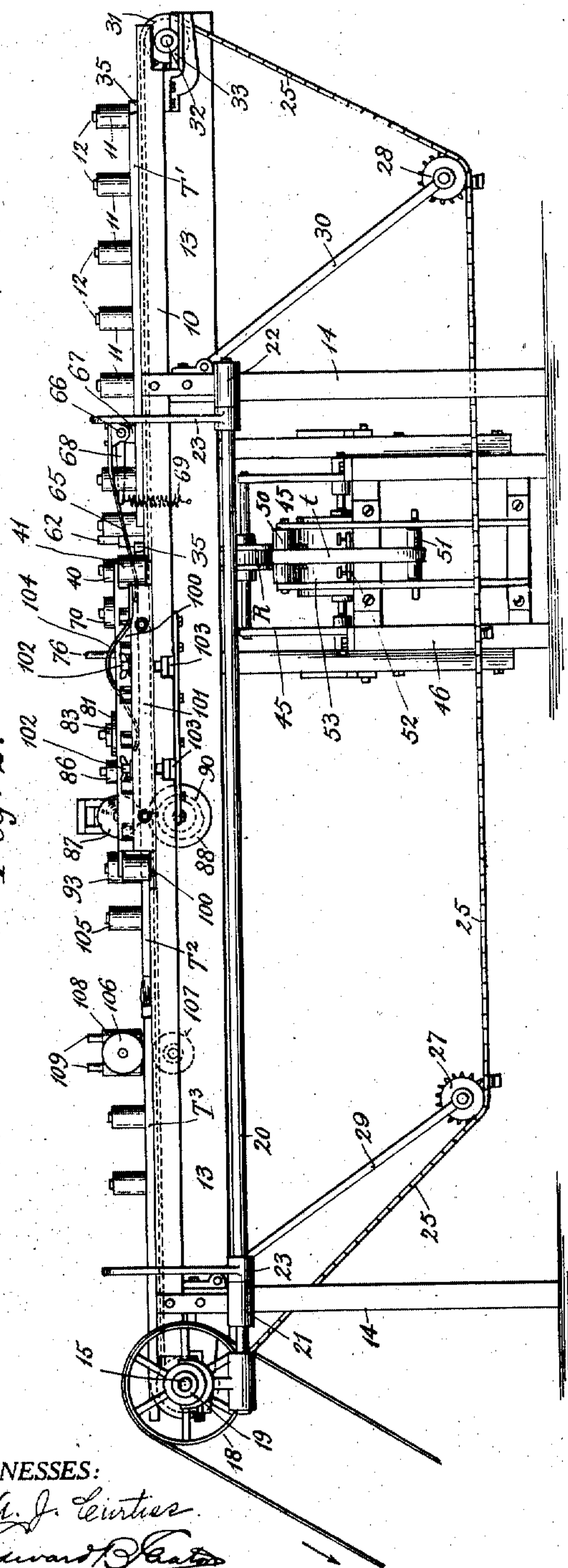
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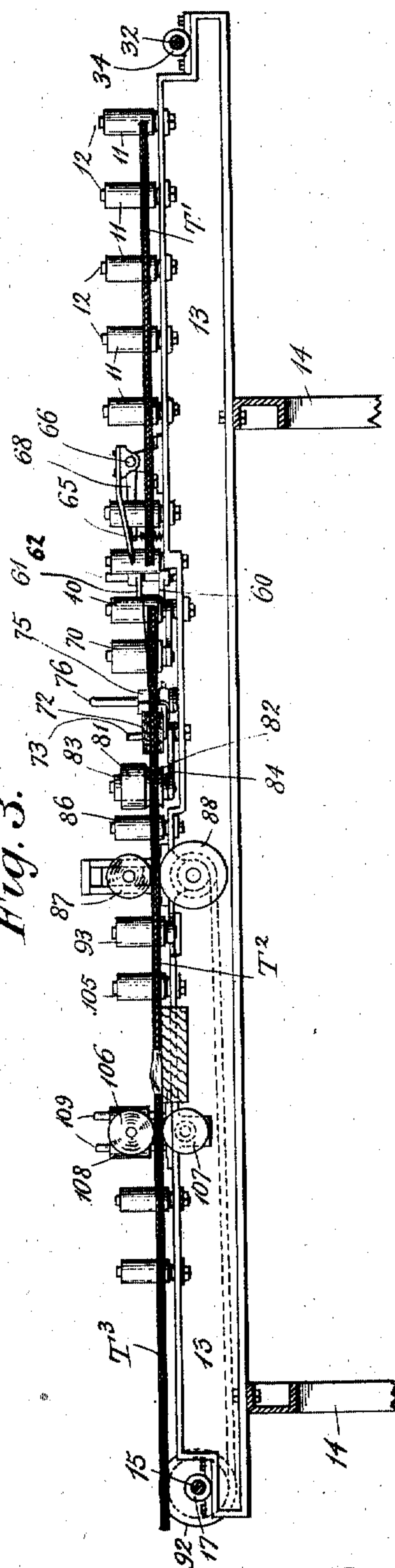
Fig. 2.



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Fig. 3.



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3 SHEETS—SHEET 3.

Fig. 4.

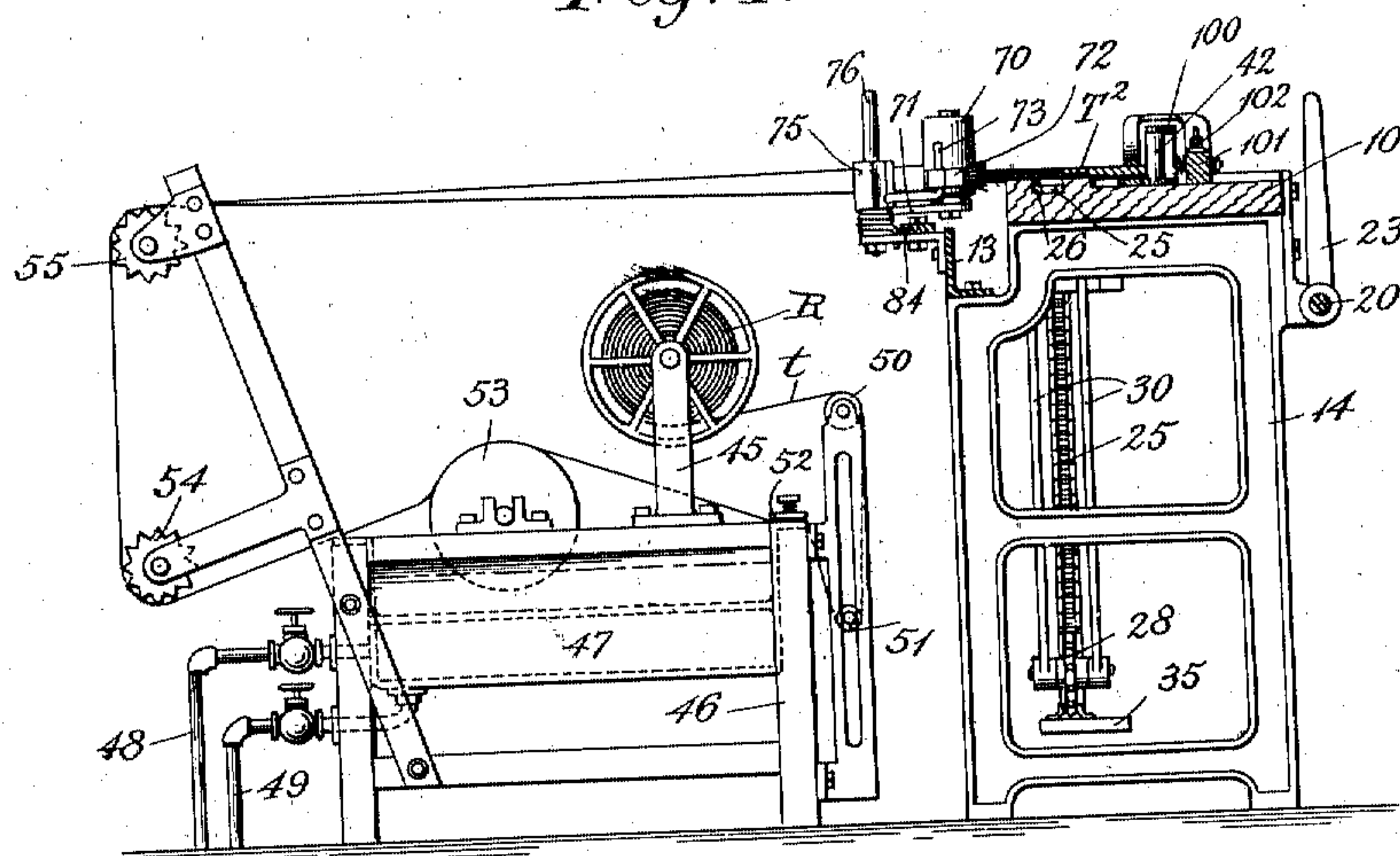
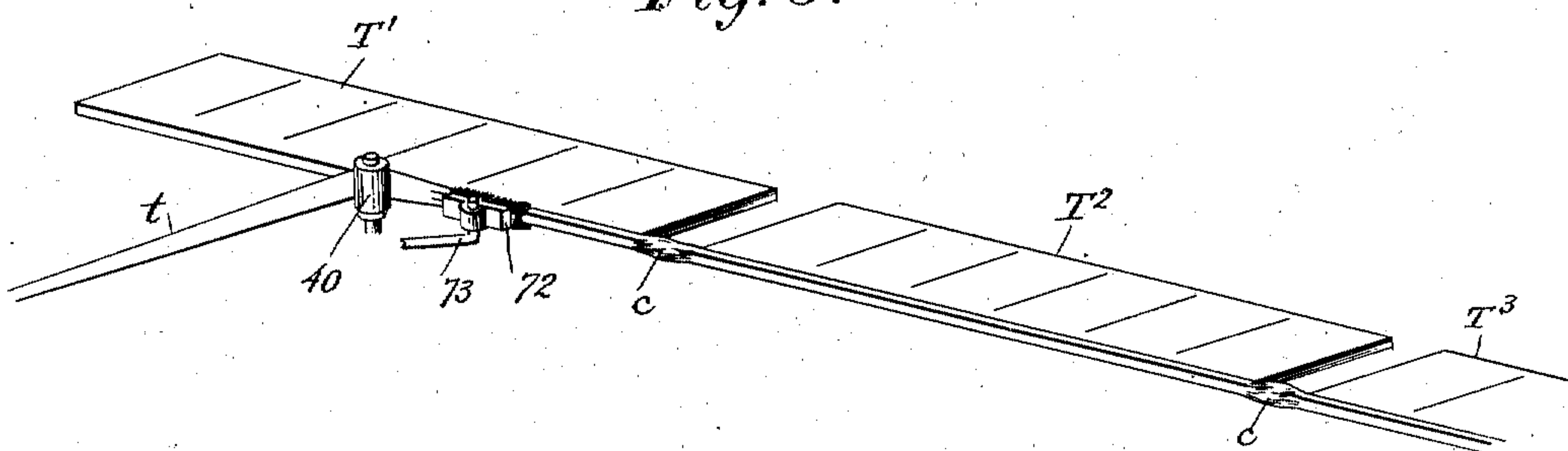


Fig. 5.



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MACHINE FOR BINDING TABLETS.

984,115.

Specification of Letters Patent.

Patented Feb. 14, 1911.

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To all whom it may concern:

Be it known that I, CHARLES F. TAYLOR, a citizen of the United States, and resident of Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Machines for Binding Tablets, of which the following is a full, clear, and exact specification.

This invention relates to tablet or pad machines, and more especially to that class thereof in which a number of sheets of paper, whether plain or ruled, are bound together by means of tape which at the same time secures the top cover firmly to the back-board without however interfering with the removal of the several sheets of paper, which latter are usually first solidified at one edge by gelatin-gum and subsequently reinforced and covered by the tape above referred to, thus producing a book of stationery, the several leaves of which may be readily pulled out, one by one, without affecting the covers.

My invention has for its primary object the provision of a simple machine into which the tablets are consecutively fed, and the binding tape is properly pasted in place so as to secure the covers together.

My invention has, furthermore, for its object the provision of proper tape-guiding means whereby the tape is positioned relatively to the tablet so as to project over and adhere to the covers for the required distance.

A further object of the invention resides in the provision of improved tape-pressing or "ironing" devices for producing smooth and uniform work, no matter whether the tablet be thick or thin, or whether its edge is flat or wavy.

My invention has, furthermore, for its object the provision of a tape-gumming mechanism which is automatic in its action and lays a film of gum or glue on the tape preparatory to the latter's engagement with the tablets as they pass through the machine.

Other objects of the invention will hereinafter appear and be particularly pointed out in the claims.

In the accompanying drawings, in which similar characters denote similar parts, Figure 1 is a top view of tablet-binding machine embodying my invention. Fig. 2 shows a front view thereof. Fig. 3 represents a longitudinal vertical section taken on line 3—3 of Fig. 1. Fig. 4 is a vertical

cross-section taken on line 4—4 of Fig. 1, and Fig. 5 illustrates the manner in which the tape is applied to the tablets.

Briefly stated, the tablets to be taped are fed by the operator to a continuously-moving endless carrier-chain which is provided with a series of tablet-engaging devices so disposed as to leave a small space between the rear edge of one tablet and the front edge of the succeeding one in which condition the several successive tablets are carried between suitable guiding rollers into contact with the tape which has its inner face provided with a film of gum or glue and is pressed against the back of the tablet, as well as laid over the edge of the top cover and back board thereof. The tape is pulled along by the movement of the tablet to which it adheres, and the several succeeding tablets are thus bound in what may be termed a "continuous" manner, so that the gaps between the successive tablets are bridged by said tape, which latter may be cut by a suitable mechanism or by hand, in order to sever the several tablets, which are then discharged from the machine by the movement of the carrier chain.

Referring to the drawings, the numeral 10 denotes a table having a smooth top and adapted to support the tablets which are placed thereon by the operator at O, so as to rest with their back edges against a series of rollers 11, which are journaled on studs 12 fixed on frame or bed support 13, extending the entire length of the machine and supported by legs 14. In order not to obscure some parts of the machine-mechanism, the tablets T¹, T², T³ on the table in Fig. 1 are indicated by dot and dash lines, while in the other figures they are shown in full.

Disposed at the left hand end of the machine, is a shaft 15 journaled in bearings 16, 17, and supporting a loose pulley 18 which may be clutched to the shaft by a collar 19 under the control of the operator by means of a longitudinally-disposed shipper shaft 20 journaled in bearings 21, 22 and provided with handles 23. Secured to the shaft 15, is a sprocket wheel 24 for driving a chain 25 which constitutes the tablet-carrier of the machine and the upper run of which is supported in a groove 26 of the table 10. From the sprocket wheel 24 the carrier-chain 25 passes beneath idlers 27, 28, supported in swinging frames 29, 30, respectively and thence around an idler 31 on a shaft 32 jour-

naled in bearings 33, 34 disposed at the right hand end of the machine. Secured at certain predetermined points of the chain are a series of tablet-engaging devices or pushers 5 35, the distance between which may be varied as desired and to correspond to the length of the tablets to be operated upon. In the present instance, the length of the chain is such as to provide for seven distance-spaces, and it will be understood that 10 if the chain be shortened or lengthened to accommodate either a less number of greater spaces, or a greater number of smaller spaces, the idlers 27, 28, will permit this action and 15 keep the chain tight.

Each tablet, as it is placed on the table by the operator is successively engaged at its rear or right hand end by the first pusher coming into action, and is then caused to 20 pass between a tape-roller 40 and a presser-device indicated in a general way by P and comprising a bar having a series of rollers 41, 42, the first one, 41, of which is preferably of larger diameter than the others in 25 order to facilitate the entrance of the pad between it and the tape roller 40.

The tape-supplying mechanism is clearly shown in Figs. 1, 2 and 4, and so disposed that the tape enters the machine at an angle 30 relatively to the line of travel of the tablets. Referring to Fig. 4, it will be seen that a roll of tape R is supported on uprights 45 which form a part of a frame 46 carrying a tank 47 which contains glue or similar adhesive. Under ordinary circumstances I 35 consider glue to be best suited for the present needs, and means are provided for maintaining said glue in soft and plastic conditions, these means consisting substantially 40 of a heat chamber arranged below the glue-compartment of the tank 47 and adapted to be kept hot by the introduction of steam entering the same through a steam-supply pipe 48, a pipe 49 being provided to carry off condensation in said chamber. From the supply 45 roll R, the tape *t* is conducted over a roller 50, then around a gravitative looping-roller 51 whereby the roll is unwound as needed, and between the jaws of a stationary 50 tension device 52, whence the tape passes into peripheral contact with a gumming roller 53 which is journaled on the frame 46 and transfers the glue in the tank 47 to the underside of the tape *t*.

55 From the gum-roller 53, the tape passes over idlers 54, 55, and is then given a quarter turn so that its width will now be disposed vertically, in which condition it passes over and partially around the roller 40 previously mentioned, and into contact with the 60 back-edge of the tablet.

The width of the tape is generally about from one half inch to one inch greater than 65 that the tape edges can "lay-over" the tab-

let sufficiently to take a firm hold on both the top-cover and the bottom-board, and, in order to insure a proper guiding of the tape so that such "over-lay" may be alike 70 on top and bottom, or at least to prevent any variation from the parallelism of the tape edge with the tablet edge, I deem it expedient to pass the tape between a pair of guide-fingers 60, 61 disposed adjacent the tape roll 40 75 and mounted for adjustment vertically on a stud 62 which is secured to the frame 13. In this manner the line of tape-travel is positively positioned relatively to the back-edge of the tablet, and the amount of over-lay can 80 be regulated as desired.

In order to assist the tape-guiding devices, I provide means for holding the tablet against the table, a feature which becomes 85 necessary in practice on account of the natural tendency of the tablet to rise and also on account of the vertical undulations of the back edge. In the present instance I have 85 shown for this purpose a presser blade 65 preferably mounted at one end on a horizontally disposed spindle 66, journaled in a 90 bearing 67 and having an arm 68 which is pulled downward by a spring 69, so that the blade 65 normally tends to hold the back-edge of the tablet down, and yet may be 95 thrown upward and out of the way when desired. Furthermore, the construction will permit the blade to accommodate itself to different thicknesses of tablets without requiring any special adjustment.

Inasmuch as under the conditions above 100 described, the edges of the tape will project above and below the limits of the back-edge of the tablet, means are provided to turn both tape-edges over the tablet, subsequent to the 105 adhesion of its main or body portion therewith, which latter result is achieved by employment of a flattening roller 70 mounted on a spring-actuated frame 71, pivotally 110 supported on the stud of the roller 40. By virtue of this organization, any variations from a straight-line travel of the back edge of the tablet cannot influence the proper operation of the roller 70.

The function of turning-over the edge- 115 portions of the tape, may be performed in many different ways, and experience has shown that a common stiff-bristle brush, such as is shown at 72 in Fig. 1 will answer the intended purpose as well as if not better 120 than, any other, the bristles naturally touching every portion of the tape and therefore producing a full-surface contact between tape and tablet. The brush 72 is also 125 mounted for adjustment relative to the tablet-travel, by being secured upon a vertical arm 73 of a holder 74 which is clamped to a spring-actuated block 75 swiveled in a rod 76 and tending to force said brush toward the tablet, its inward movement being limited by a stop 77. After passing the brush 130.

72, the tape is edge-rolled by a combination roller comprising in its preferred form three independent elements, viz. a back-edge roller 80, a top stretcher 81, and a bottom stretcher 82 (see Fig. 3), all of which are mounted for free rotation on a stud 83 held in a spring-actuated frame 84 which is pivoted at 85 on an ear projecting from the frame 13. Of these, the roller 80 serves to roll the back-edge while the stretchers by virtue of their initial inward rotation tend to stretch the tape edges, and by the weight of the top roller 81 press the stretched edges into close contact with the tablet. From the combination roller, the tablets are carried past a stationary guide roller 86 and between a pair of what may be termed "ironing" rollers 87, 88, which flatten the turned-over portions of the tape against the tablet, and the lower one, 88, of which may be frictionally driven by a belt 89 connecting the pulley 90 on the roll-shaft 91, with a driving pulley 92 secured on the main power shaft 15 previously mentioned. The upper roller 87 is gravitative and rests on top of the tablet. After passing the "ironing" rollers 87, 88, the taped tablet-edge is again subjected to the action of a back-roller 93 journaled on a stud 94 carried by a spring-actuated swinging frame 95 pivoted at 96 on the frame 13.

From the foregoing it will be understood, by recapitulation, that the tape is first positioned relatively to the tablet, then edged-over by the brush, then stretched, then ironed on top and bottom and finally back-rolled, the several operations taking place successively and rapidly while the gum or glue is "setting."

The several elements just enumerated cooperate with the presser-device P which engages the tablet at its front edge, and, inasmuch as more or less unevenness exists in such edge, the presser device is slightly resilient, as is illustrated in Fig. 1, in which the rollers 41, 42 are shown mounted in a bar 100 which is movably held under adjustable spring-pressure relatively to a stationary holder 101 adapted to be adjusted transversely of the table 10, to accommodate tablets of different widths, by thumb-screws 102 in engagement with suitable nuts shiftable in slots 103 provided in the table 10. A spring-blade 104 is secured to the stationary holder 101 and serves to prevent the front edge of the tablet from rising under the lateral pressure of the tape-manipulating device at the other edge of the tablet,

while at the same time such blade will operate on tablets of different thicknesses and its tension will increase in proportion to such thickness. After passing the tape-applying devices, the tablets will be guided by a roller 105 to and between a pair of finishing rollers 106, 107 (see Fig. 3); the lower 107 is stationary, while the upper is mounted for rotation on a comparatively heavy slide 108 guided on pins 109 attached to a bracket which is secured to the frame 13. The tablets being now taped, will be discharged by the movement of the carrier chain 25, it being understood, of course, that the tape portions which connect the several tablets in the manner indicated by C in Figs. 2, 3 and 5, are cut, either by automatic mechanism, or by another attendant who can take care of replenishing the tape-supply and its introduction into the machine at the rear of the table, at the same time.

In conclusion it should be noted that the body portions of the several vertical rollers extend slightly below the top level of the table so that a proper engagement between said rollers and the respective tablet-edges will always be assured.

Many changes may be made in the general organization of the several cooperative elements, or in their particular construction, without departing from the spirit of the invention.

I claim:

1. The combination, with a table, and means for feeding tablets successively over said table, of means for applying tape to one edge of the tablets, a movable bar operative on the other edge of the tablets for guiding said tablets into contact with the tape-applying means, a stationary member on the table, and springs interposed between said bar and member.
2. The combination, with a table, and means for feeding a tablet over said table, of means for applying tape to one edge of the tablet, a yielding presser bar operative on the other edge of the tablet for pressing the same into contact with the tape-applying means, means for varying the pressure of said yielding member, and a pair of independent spring-actuated devices for maintaining the opposite edges of the tablet in contact with the table top.

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