

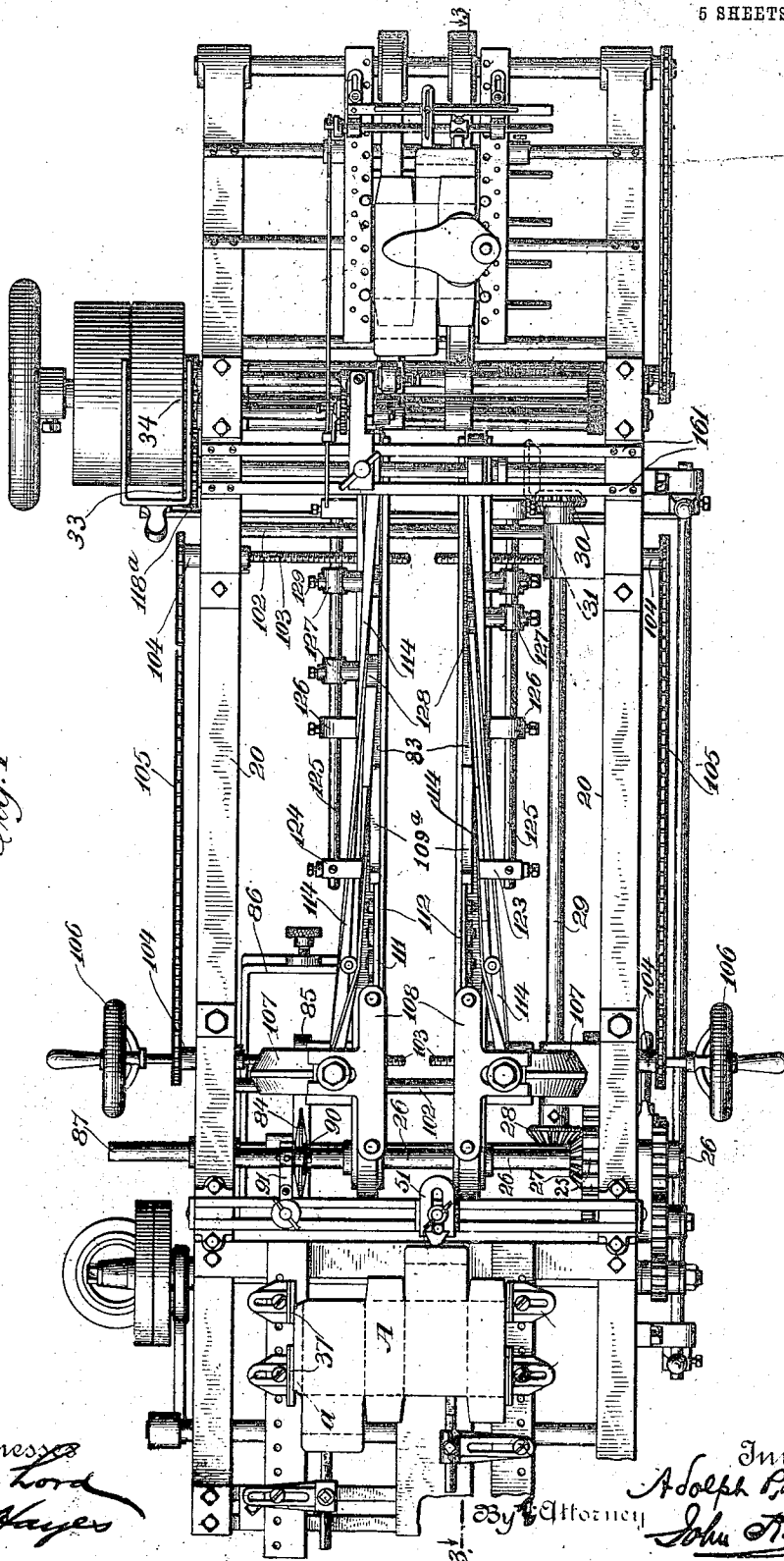
A. POTDEVIN.
MACHINE FOR MAKING BOXES.
APPLICATION FILED JUNE 10, 1907.

992,244.

Patented May 16, 1911.

5 SHEETS—SHEET 1.

Fig. 1



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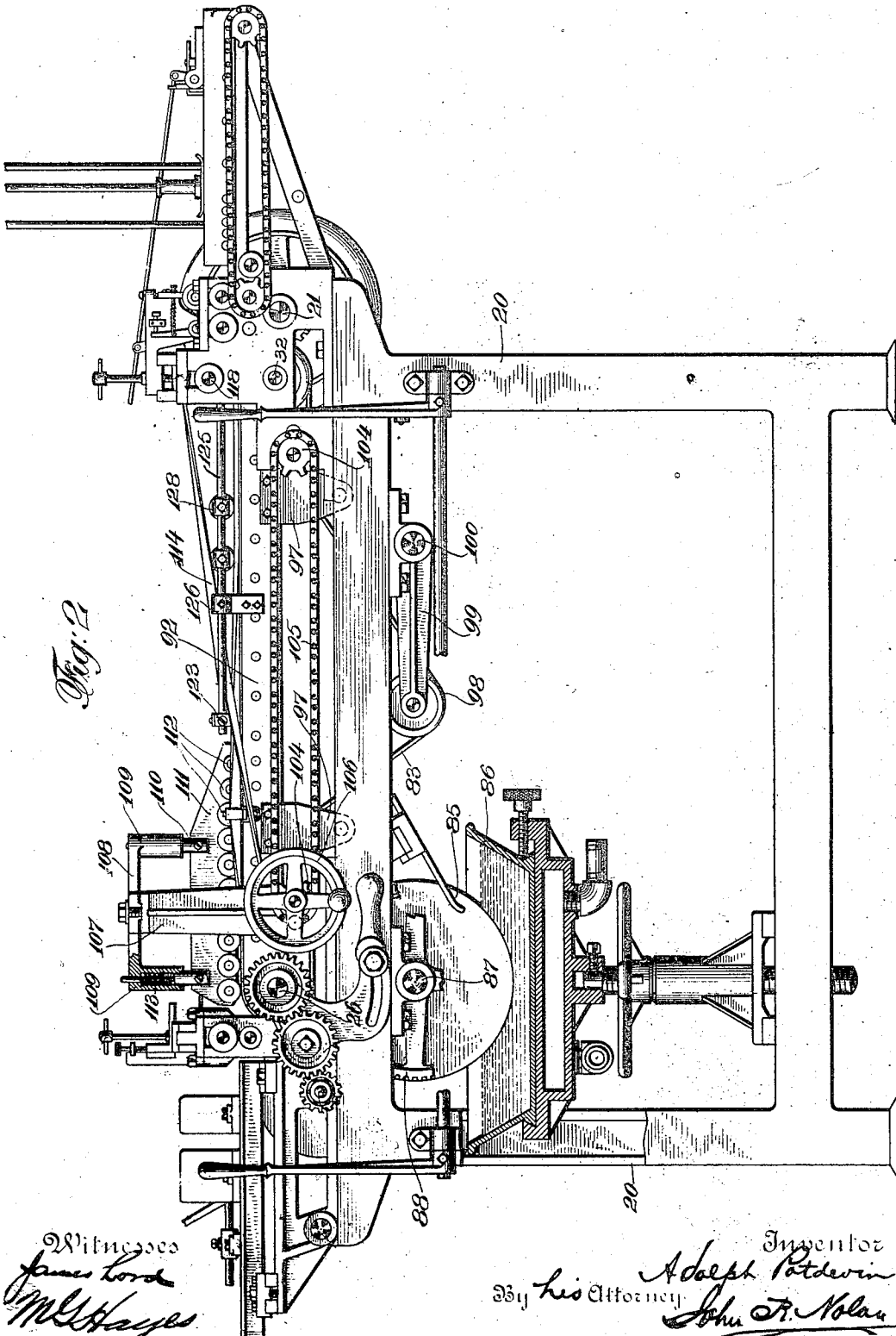


Fig. 2

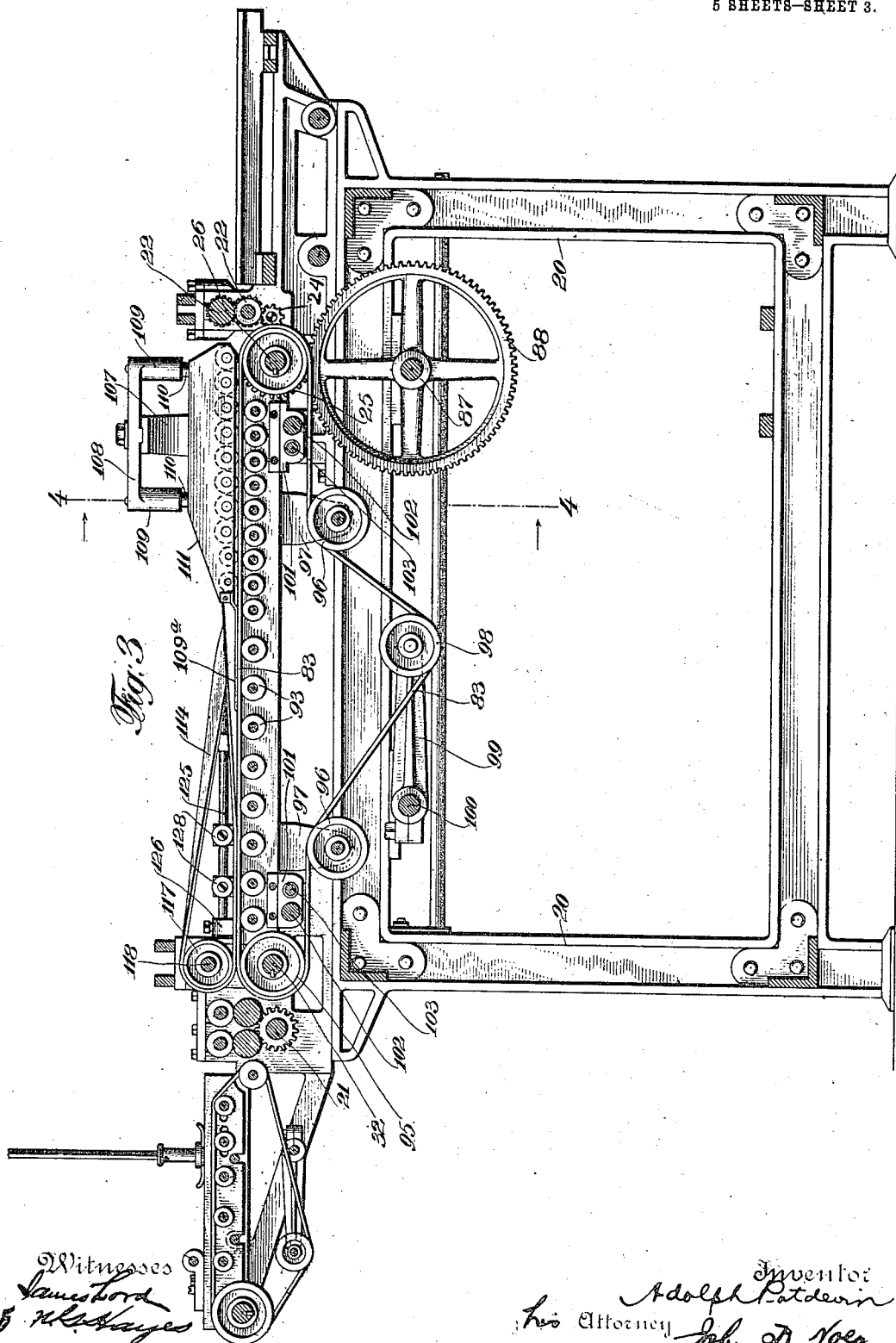
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5 SHEETS—SHEET 3.



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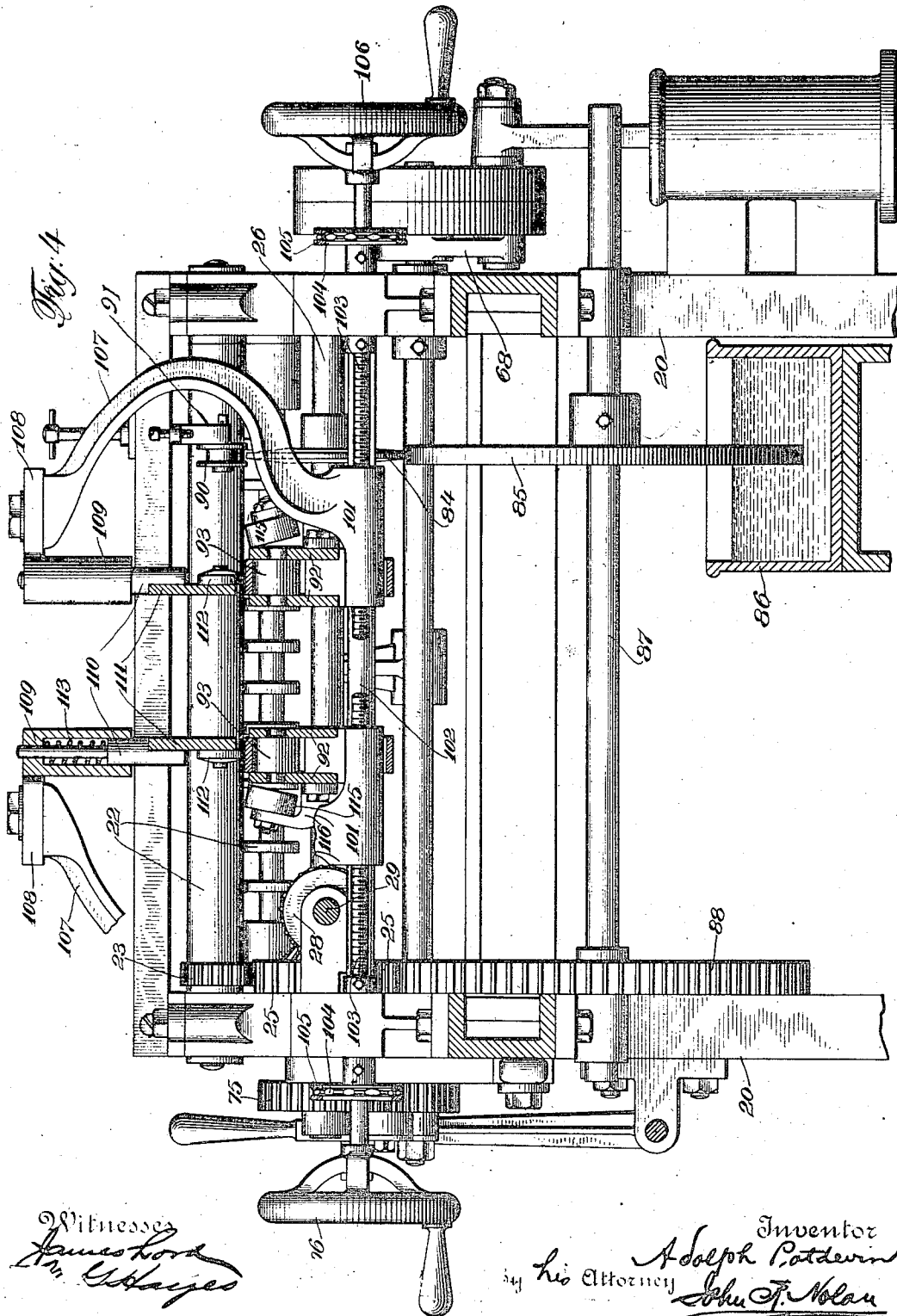
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6 SHEETS—SHEET 4.



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5 SHEETS—SHEET 5.

Fig. 5

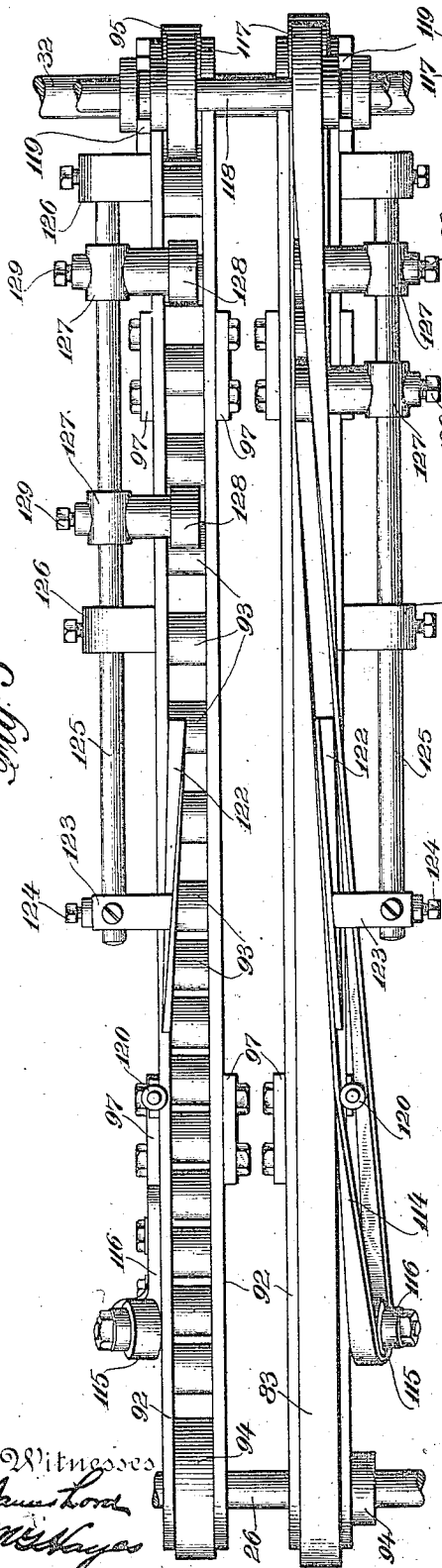
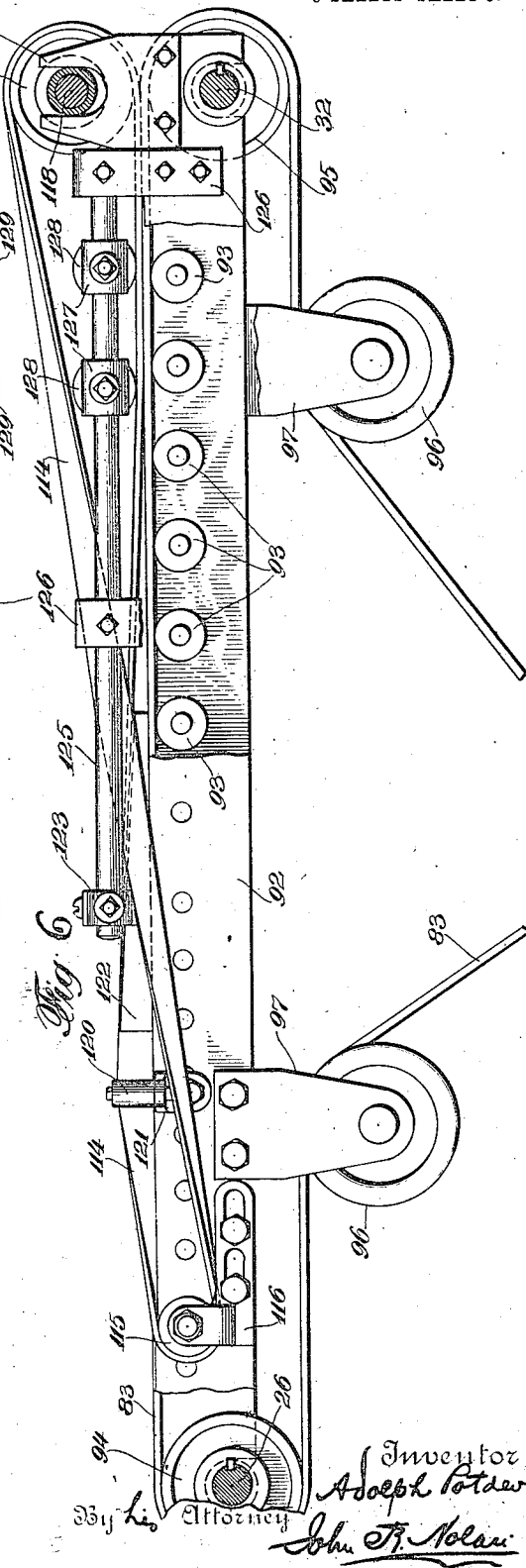


Fig. 6



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UNITED STATES PATENT OFFICE.

ADOLPH POTDEVIN, OF NEW YORK, N. Y., ASSIGNOR TO POTDEVIN MACHINE COMPANY, OF BROOKLYN, NEW YORK, A CORPORATION OF NEW YORK.

MACHINE FOR MAKING BOXES.

992,244.

Specification of Letters Patent.

Patented May 16, 1911.

Application filed June 10, 1907. Serial No. 373,098.

To all whom it may concern:

Be it known that I, ADOLPH POTDEVIN, a citizen of the United States, residing in the borough of Brooklyn, county of Kings, city and State of New York, have invented certain new and useful Improvements in Machines for Making Boxes, of which the following is a specification.

This invention relates to machines for making paper boxes; and more especially to that class of machines in and by which previously cut and scored blanks are gummed and folded to constitute flat tubular bodies with projecting end flaps, such bodies being adapted for subsequent manipulation to form boxes or cartons in a manner well understood.

The present invention, generally stated, concerns various improvements in the blank carrying and folding mechanisms as will be hereinafter particularly described and claimed.

In the annexed drawings the improvements are illustrated as embodied in a machine for making flat carton tubes, but it is to be understood that the invention may be advantageously employed in the production of other boxes, shucks and analogous articles. It is also to be understood that the form of embodiment of the invention herein set forth has been selected for exemplification purposes only, and that the apparatus may be modified in many respects to meet varying requirements, without departing from the fair spirit of the invention.

Referring to the drawings—Figure 1 is a plan view of the machine. Fig. 2 is a side elevation thereof, partly in section. Fig. 3 is a longitudinal vertical section, as on the line 3—3 of Fig. 1. Fig. 4 is a transverse vertical section, enlarged, as on the line 4—4 of Fig. 3. Fig. 5 is a plan of the adjustable supporting frames for the blank carrying and folding belts, one set of belts being omitted to expose parts otherwise concealed. Fig. 6 is a side elevation of Fig. 5, part of the frame wall being broken away.

20 designates a supporting frame of suitable shape and size for its intended purpose, and 21 the main driving shaft journaled therein and adapted to be actuated from a convenient source of power.

22 indicates the usual parallel feed-rollers to the bite of which the forward edges of the

individual box blanks (A) are delivered, 55 and the blanks thereby successively fed into the machine. The shafts of these rollers are journaled in boxes in the sides of the main frame, and are provided at or near their respective ends with intermeshing gear wheels 60 23. The gear wheel of the lower shaft meshes with an underlying pinion 24 on a stud shaft, and this pinion, in turn, is engaged with and driven by a spur wheel 25 on a shaft 26 which extends transversely of the machine and in parallelism with the feed rollers. On the wheel 25 is a bevel gear 27 which meshes with a bevel wheel 28 on the forward end of a longitudinally disposed shaft 29 journaled in suitable bearings on the main frame. On the rearward end of the shaft 29 is a bevel wheel 30 which gears with a similar wheel 31 on a shaft 32 adjacent to and parallel with the main shaft. The shaft 32 carries at one end a gear wheel 75 33 which meshes with a similar wheel 34 on the main shaft. Thus the power is transmitted from the main shaft to the shaft 26, and thence through the intermediate gears to the feed-rollers. These rollers deliver the 80 blanks to two carrying belts 83 extending longitudinally of the machine, which belts are adjustable in parallelism toward and from each other as the width of the blanks may require, suitably-disposed supporting 85 carriages therefor being provided, as will presently appear. As the blanks are delivered to the carrying belts 83, the marginal edges (a) of the blanks are progressively supplied with liquid glue, or other suitable 90 cementing medium, by contact with the periphery of a glue-applying wheel 84, on the driven shaft 26. This wheel contacts peripherally with a large feed-wheel 85, rotating within a suitably-disposed glue-pot 95 86 of usual construction. The wheel 85 is carried by a transverse shaft 87 journaled in the sides of the main frame, which shaft is provided with a spur wheel 88 in mesh with the pinion 25 on the driven shaft 26. 100 A grooved roller 90, whose shaft is journaled in a bracket 91 projecting from the suitably disposed frame bar maintains the marginal edges of the blanks in contact with the glue-applying wheel. (Figs. 1, 2 and 4.) 105

Each of the carriages for the blank carrying belts comprises a pair of spaced parallel bars 92 in and between which are journaled

a series of rollers 93 upon which the upper run of the proximate belt is supported. The ends of these bars embrace pulleys 94, 95, which are mounted to slide along the transverse driven shafts 26, 32, respectively, previously described. The belt passes around these pulleys 94, 95, and is impelled thereby. It also passes upon guide pulleys 96, whose shafts are mounted in brackets 97 depending from the bars 92. An idler pulley 98 rests upon the belt at a point intermediate the guide pulleys so as to keep the belt taut, the idler being conveniently carried by an arm 99 which is free to turn on, and move longitudinally of, a transverse shaft 100 supported in the sides of the main frame. (See Figs. 2 and 3.)

The carriage bars 92 are provided near their respective ends with brackets 101 through apertures in which freely extend transverse guiding and steadying rods 102. These brackets are also provided with threaded apertures for the reception of correspondingly threaded screw shafts 103 which project outwardly beyond the adjacent side of the main frame. On the projecting ends of the shafts are sprocket wheels 104 around which passes an endless chain 105 whereby when one of the shafts 103 is properly rotated both shafts will be correspondingly actuated to effect the bodily adjustment of the carriage and its appurtenances toward or from the longitudinal median line of the machine, as desired.

One of the shafts is provided with a hand wheel 106 to facilitate the operation just described.

It is to be understood that the two carriages are identical in construction and operation, saving that they are oppositely disposed, and that they are each provided with corresponding adjusting devices of the character described, whereby they may be independently adjusted from or toward each other, as occasion may require.

Rising from each of the brackets 101, preferably integral therewith, is an arm 107 which curves outwardly and inwardly to overhang the adjacent carriage, or nearly so. On this arm is bolted a bar 108 which extends longitudinally of the carriage. At the respective ends of this bar are depending apertured bosses 109 in which are slidably fitted vertically movable posts 110 rising from a bar 111 which extends directly above and parallel with the carrying belt. In the bar 111 are journaled a series of close-lying rollers 112 which are held yieldingly in contact with the belt by suitable springs 113 contained in the apertures of the bosses 109. Extending rearwardly from the lower portion of the bar and constituting, in effect, a continuation thereof, is a flat strip 109^a which is about the width of the belt and is adapted to lie parallel

thereto, or substantially so, in a manner to present a straight supporting edge to the blank as the latter is being bent and folded, as hereinafter described.

By the construction just described it will be seen that the rollers 112 and their supporting devices together with the edge strips 109^a are borne by the carriage and are adjusted concurrently with the carrying belt. It will also be seen that as the blanks are fed to the carrying belt they are maintained in close contact with the belt by the series of over-hanging rollers so as to be effectually transported.

Adjacent each of the carrying belts, and traveling concurrently therewith, is a twisted folding belt 114 which is constructed and arranged to engage the opposing edges of the blanks before they leave the pressure rollers, and which belt then, in conjunction with the carrying belt, grips and impels the blank,—at the same time gradually deflecting the lateral edges of the blank upward and inward against the opposing edges of the strips 109^a and then continuing the pressure inward and downward in a manner to fold the side portions over upon the body of the blank and insure the close contact of the gummed margin with the underlying side portion of the blank. The belt 114 passes around a slightly inclined pulley 115, the shaft of which is mounted in a bracket 116 bolted to the outer side of the carriage adjacent the depending bracket 97, and also around a pulley 117 mounted directly above the pulley 95 which supports the rearward portion of the carrying belt. The pulley 117 is slidably mounted on a shaft 118 which extends transversely of the main frame and in parallelism with the shaft 32 of the lower pulley 95. The shaft 118 is provided with a gear wheel 118^a which corresponds and meshes with the gear wheel 33 on the shaft 32, thereby effecting the concurrent travel of the folding and carrying belts. The carriage is provided with arms or jaws 119 which embrace a peripherally grooved hub of the pulley 117 so that the latter will partake of the adjustments of the carriage. The belt 114 is crossed in its passage from the lateral pulley 115 to the overlying pulley 117, and appropriate guide devices are provided to give the requisite twist or angle to the belt as it passes to, over upon, and along with, the carrying belt. In the present instance, a vertically disposed guide roller 120 is arranged in rear of the pulley 115 so as to direct to vertical position the portion of the belt contacting therewith. This roller is mounted on a stud rising from a bracket 121 bolted to the outer side of the carriage. In the rear of the roller is an inclined bar 122 which extends in an oblique path over the carrying belt, and serves as a back support and guide for the folding

belt 114 as it passes from the roller. This bar 122 is affixed to a bracket 123 which is adjustably secured by set-screws 124 to a supporting rod 125 extending longitudinally of the carriage and near to the rearward end thereof. The rod is secured to brackets 126 bolted on the side of the carriage. Slidingly fitted to the rod are inwardly extending brackets 127 in which are journaled the shafts of rollers 128 that lie directly above the path of the carrying belt. These rollers bear upon the folding belt 114 as it leaves the inclined back supporting bar 122 and maintains the portion of the belt engaged thereby in contact with the underlying surface of the carrying belt. The brackets 127 are adjustably secured to the rod 125 by set screws 129, and hence by releasing and setting the rollers at predetermined positions along the rod, and also by adjusting the bar 122 along the rod, the angularity of the folding belt may be nicely regulated to insure the efficient folding of blanks of various styles and sizes.

From the foregoing it will be seen that the folding belt and its appurtenances are mounted on the carriage, and are thereby bodily adjusted correspondingly with the carrying belt and its connections.

As the folded and cemented blanks—or flat tubes as they may be termed—approach the rearward or delivery end of the machine, they are firmly clamped in horizontal position by the opposing horizontal portions of the two belts, thereby insuring the efficient union of the folded edges of the blanks.

I claim—

1. The combination with blank-carrying and blank-folding mechanisms, of a carriage in which said mechanisms are supported and guided, and means for bodily adjusting said carriage transversely of the machine.

2. The combination of two carriages disposed longitudinally of the machine and in parallelism with each other, means for independently adjusting said carriages transversely of the machine, and blank-carrying and blank-folding mechanisms mounted on each of said carriages and adjustable therewith.

3. The combination of a blank-carrying belt, pulleys therefor, shafts along which said pulleys are adjustable, a carriage in which said belt is guided and supported, means whereby said carriage and the pulleys are correspondingly adjustable transversely of the machine, and folding mechanism mounted on said carriage and adjustable therewith.

4. The combination of a blank-carrying belt, pulleys therefor, shafts along which said pulleys are adjustable, a carriage in which said belt is supported and guided, screw-devices whereby said carriage and pulleys are correspondingly adjustable trans-

versely of the machine, and folding mechanism mounted on said carriage and adjustable therewith.

5. The combination of a blank-carrying belt, pulleys therefor, shafts along which said pulleys are adjustable, a carriage in which said belt is guided and supported, plural screw-devices whereby said carriage and pulleys are correspondingly adjustable transversely of the machine, means for simultaneously actuating said screw devices, and folding mechanism mounted on said carriage and adjustable therewith.

6. The combination with a blank-carrying belt, a twisted folding belt extending adjacent to and longitudinally of said carrying belt, and means for concurrently actuating said belts, of a carriage, guide pulleys thereon for the respective belts, and means for bodily adjusting said carriage with its pulleys and belts transversely of the machine.

7. The combination with a blank-carrying belt, of a twisted folding belt extending adjacent to and longitudinally of said carrying belt, means for concurrently actuating said belts, and adjustable means for varying the angle or twist of the folding belt, said means being adjustable longitudinally of said folding belt.

8. The combination with a blank-carrying belt, of a twisted folding belt extending adjacent to and longitudinally of said carrying belt, means for concurrently actuating said belts, an inclined back member to support the angular or twisted portion of the folding belt, and means for adjusting said member longitudinally of said folding belt.

9. The combination with a blank-carrying belt, of a twisted folding belt extending adjacent to and longitudinally of said carrying belt, means for concurrently actuating said belts, means adjustable longitudinally of said folding belt for varying the angle or twist of the latter and guide devices for maintaining the folding belt for a portion of its length in parallelism with the carrying belt.

10. The combination with a blank-carrying belt, of a twisted folding belt extending adjacent to and longitudinally of said carrying belt, means for concurrently actuating said belts, means adjustable longitudinally of said folding belt for varying the angle or twist of the latter and a series of guide rollers arranged to act upon and maintain the folding belt for a portion of its length in parallelism with the carrying belt.

11. The combination with a blank-carrying belt, of a twisted folding belt extending adjacent to and longitudinally of said carrying belt, means for concurrently actuating said belts, a series of guide rollers arranged to act upon and maintain the folding belt for a portion of its length in parallelism with the carrying belt, and means for ad-

justing said rollers longitudinally of the folding belt.

12. The combination with a blank-carrying belt, of a twisted folding belt extending
5 adjacent to and longitudinally of said carrying belt, means for concurrently actuating said belts, an inclined back member to support the angular or twisted portion of the
10 folding belt, means for adjusting said member longitudinally of said folding belt, a series of guide rollers to maintain the folding belt for a portion of its length in paral-

lelism with the carrying belt, and means for adjusting said rollers longitudinally of the folding belt.

In testimony whereof, I, have signed my name to this specification in the presence of two subscribing witnesses, this 27th day of May 1907.

ADOLPH POTDEVIN.

Witnesses:

HUGO R. WEIGLE,
D. L. THOMPSON.