

S. G. GOSS & E. J. SMITH.
 ROLL CONTROLLING MECHANISM FOR PRINTING PRESSES.
 APPLICATION FILED NOV. 15, 1916.

1,301,124.

Patented Apr. 22, 1919.
 8 SHEETS—SHEET 1.

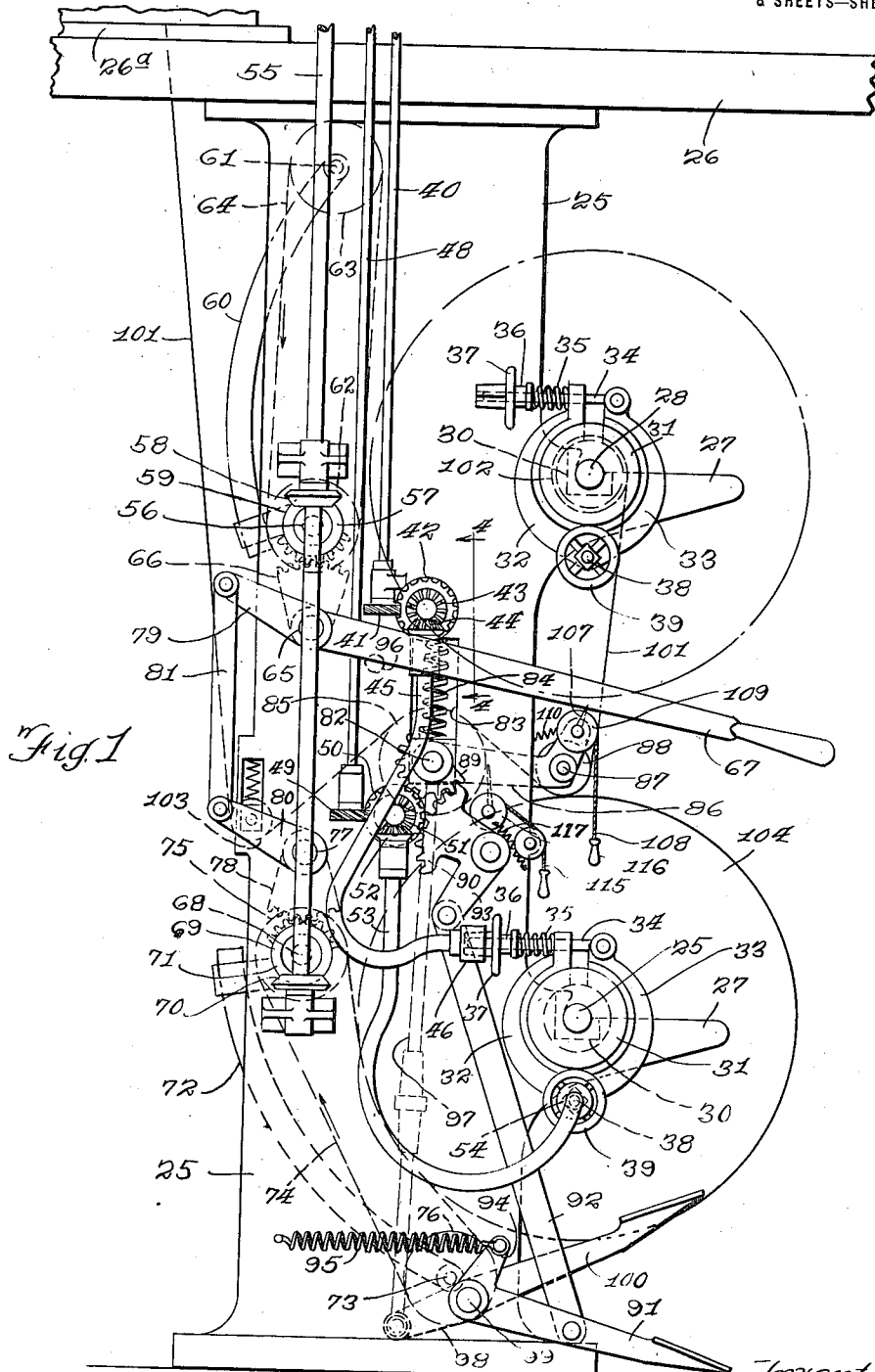


Fig. 1

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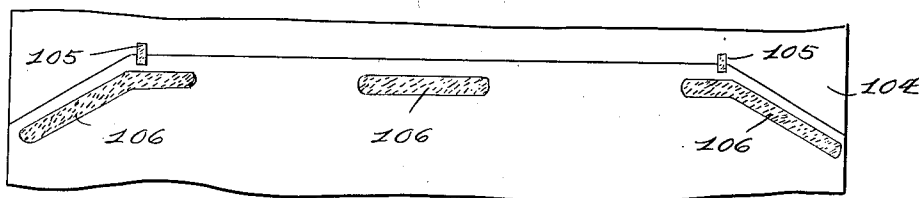


Fig. 2

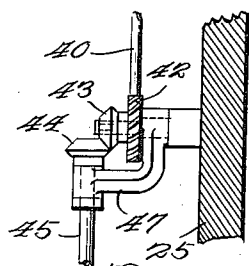


Fig. 4

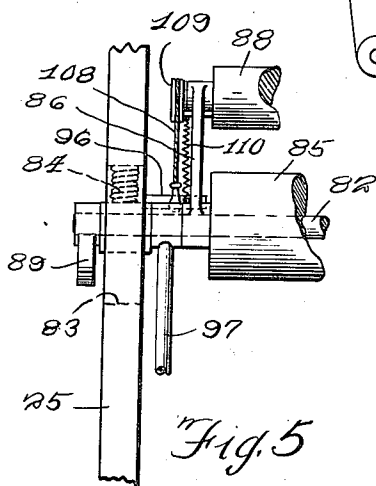


Fig. 5

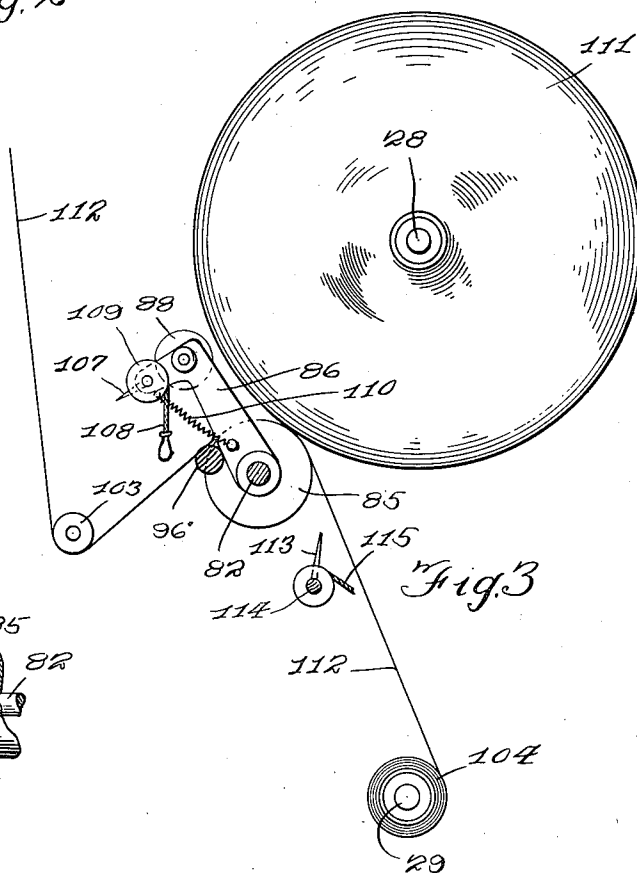


Fig. 3

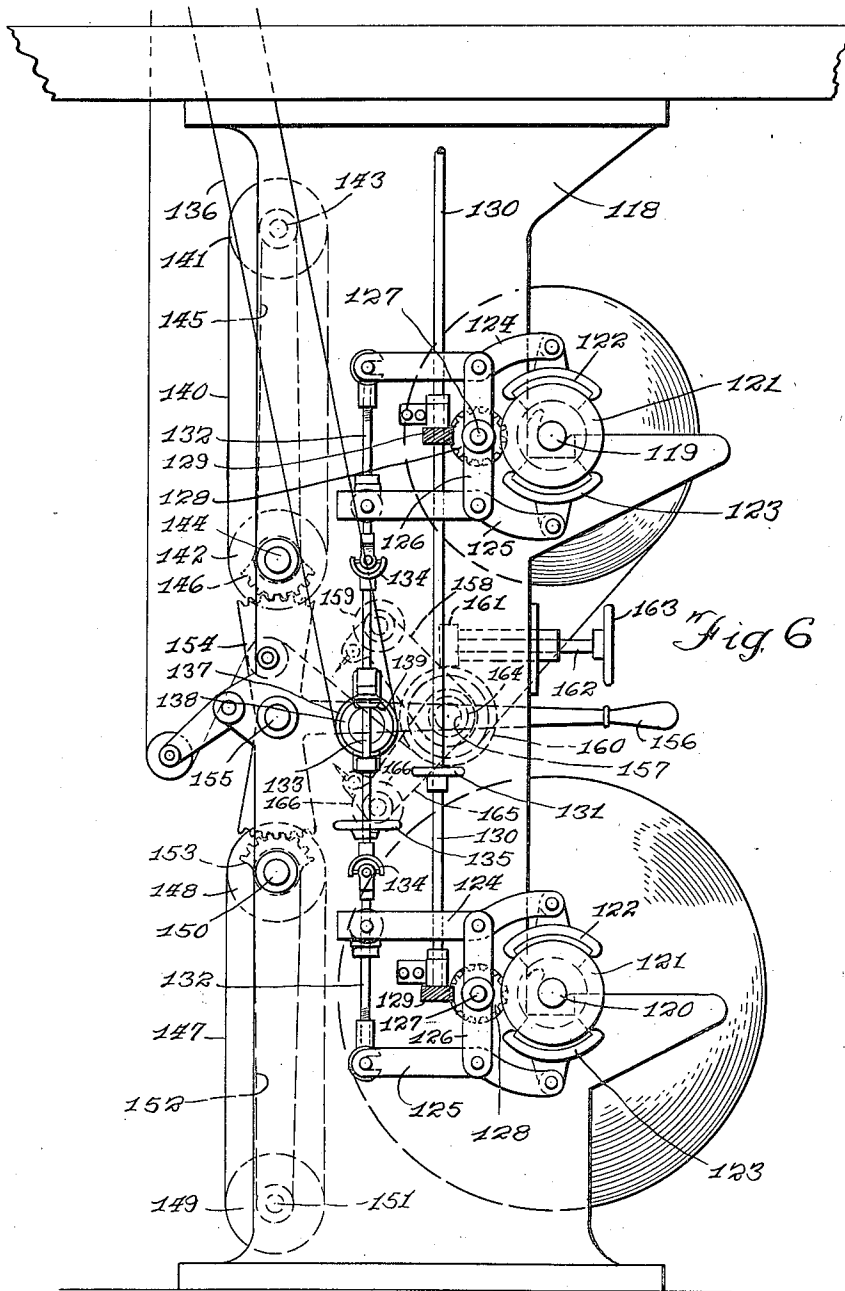
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Fig 7

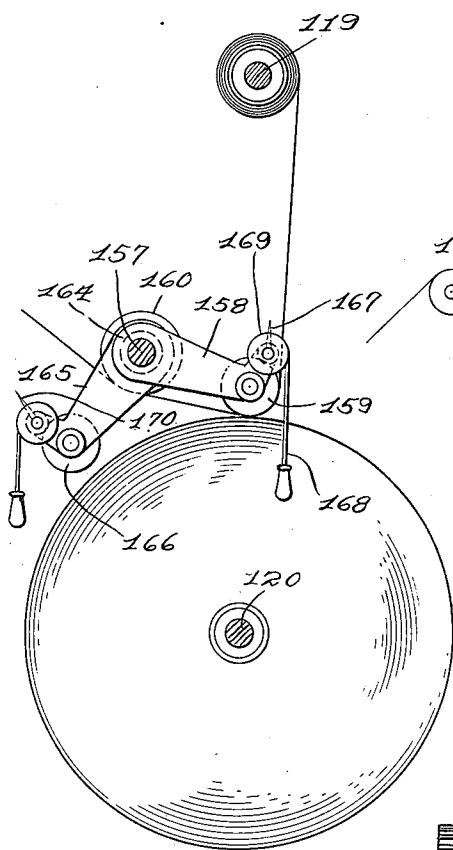


Fig 8

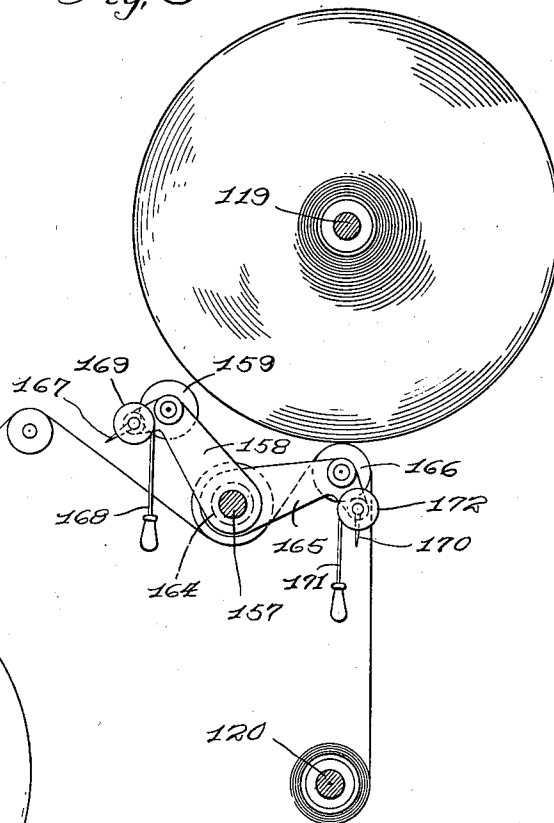
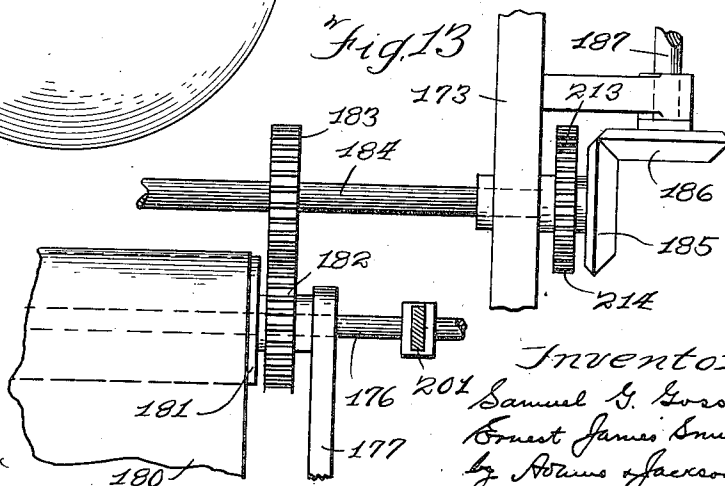


Fig 13



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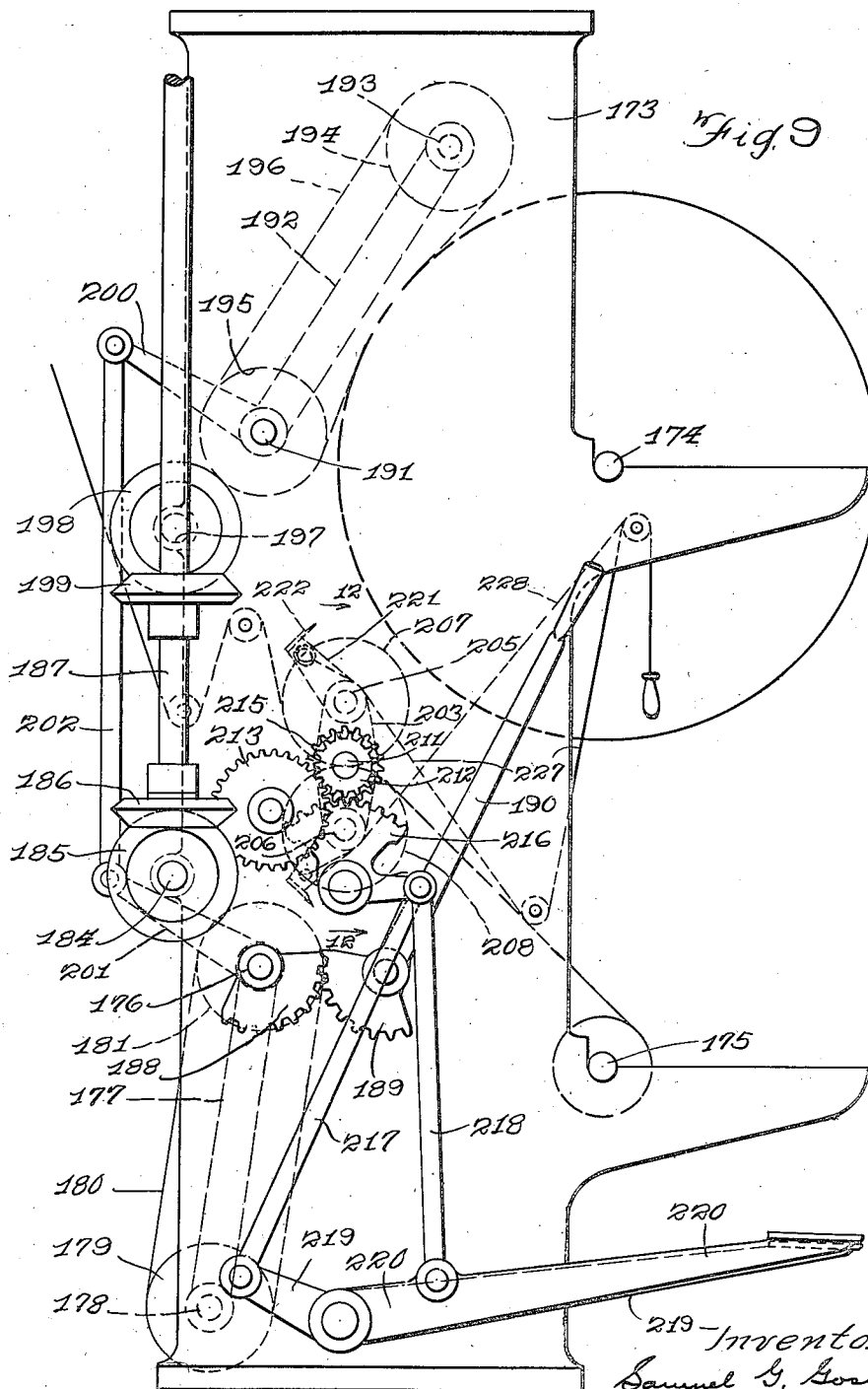
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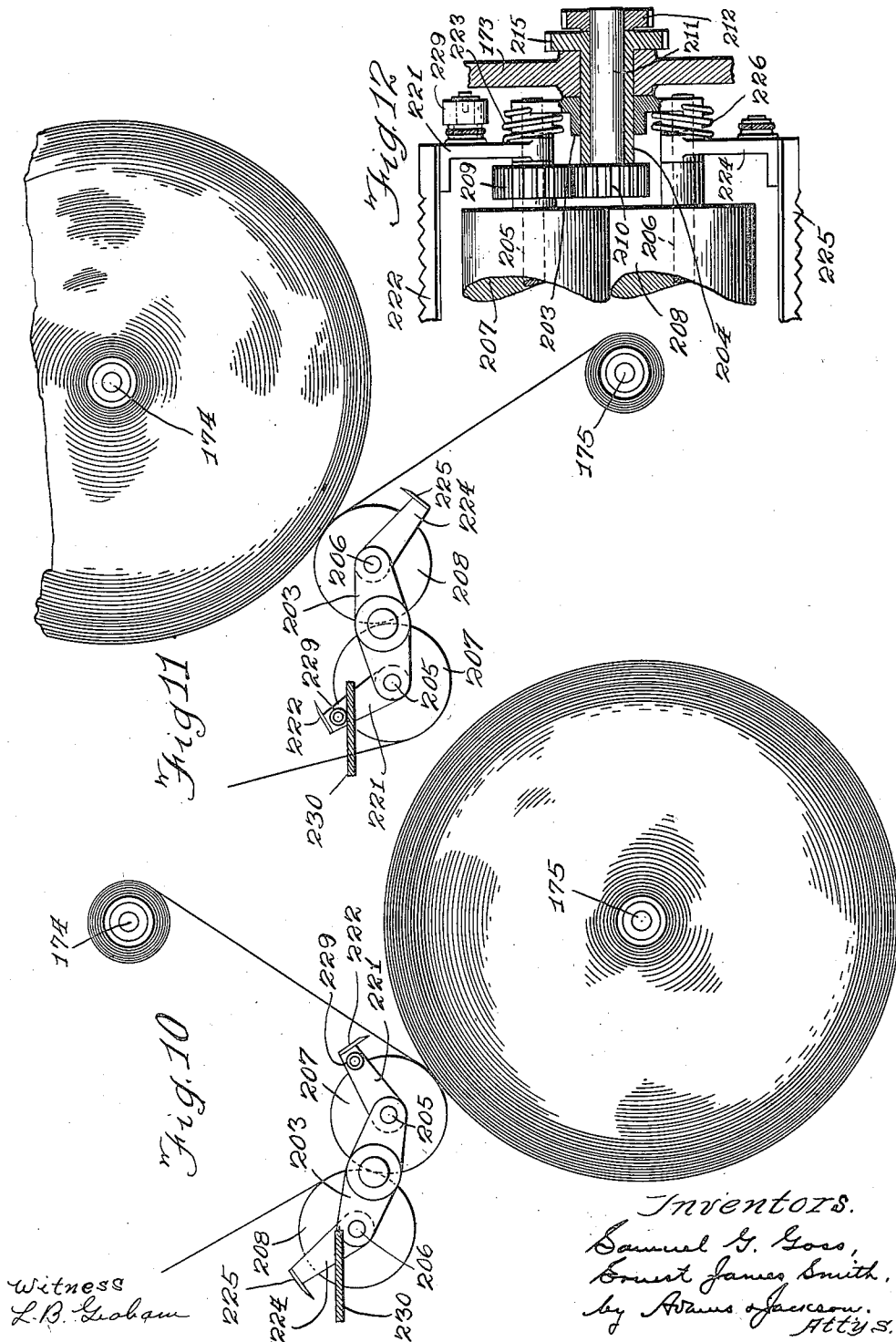
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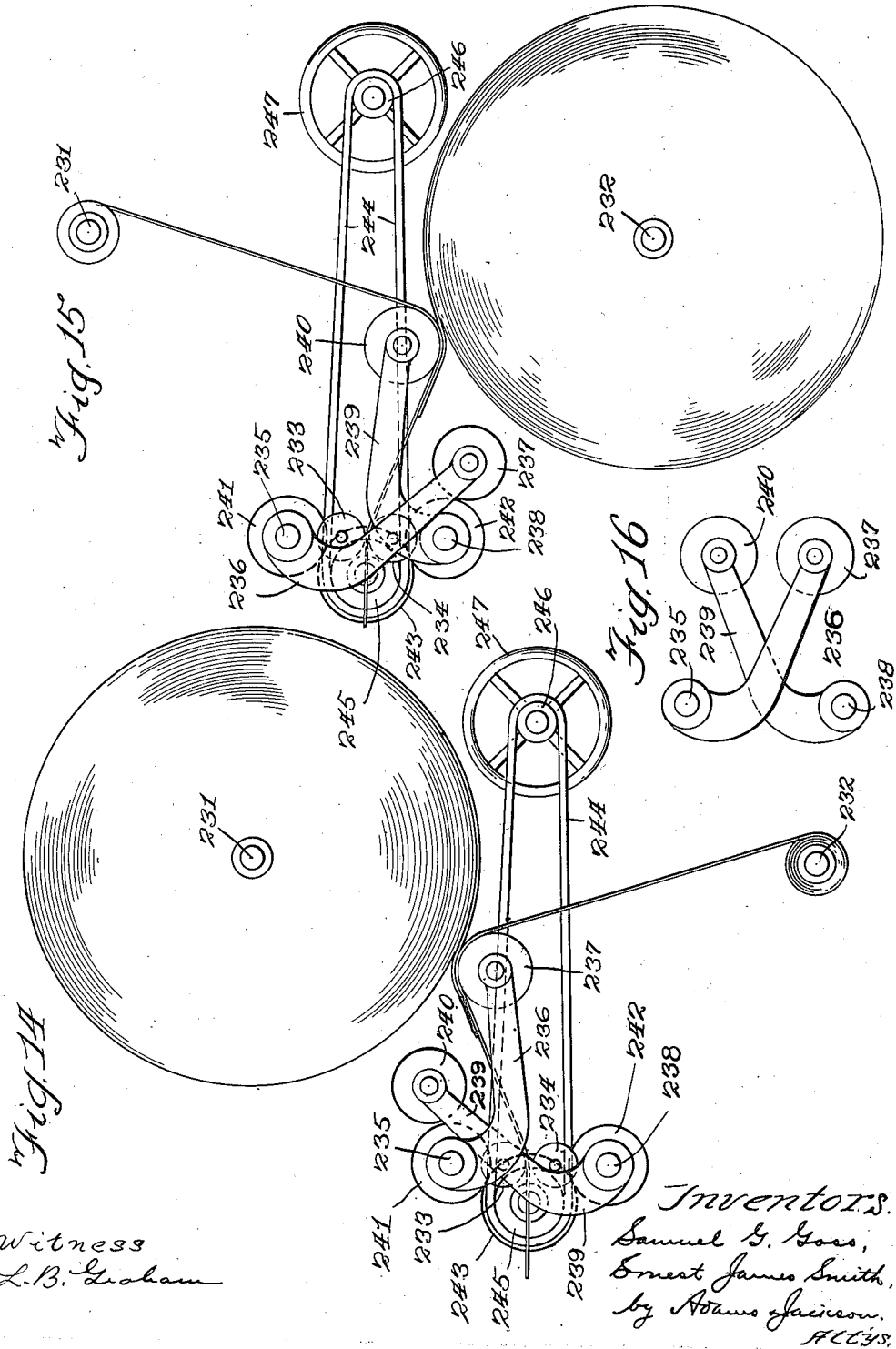
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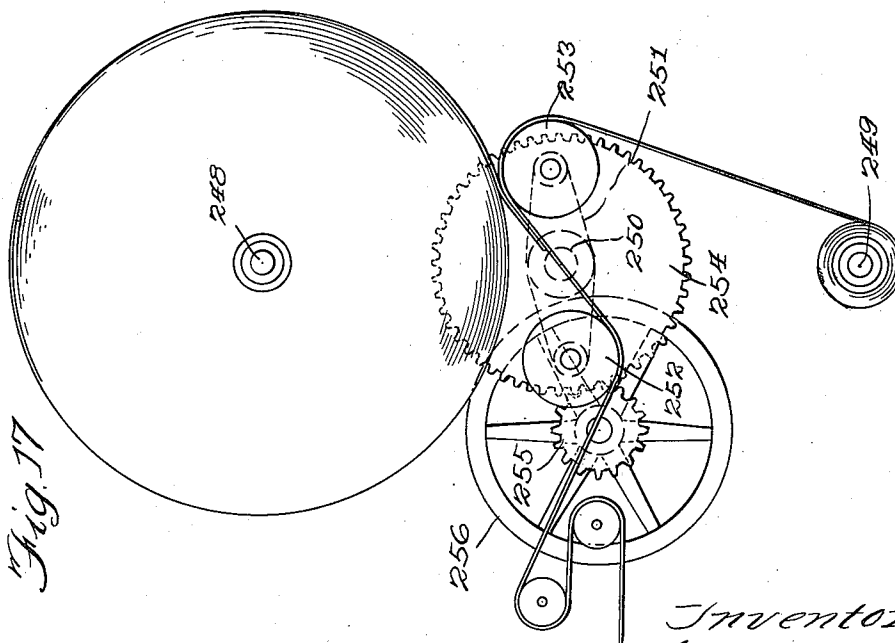
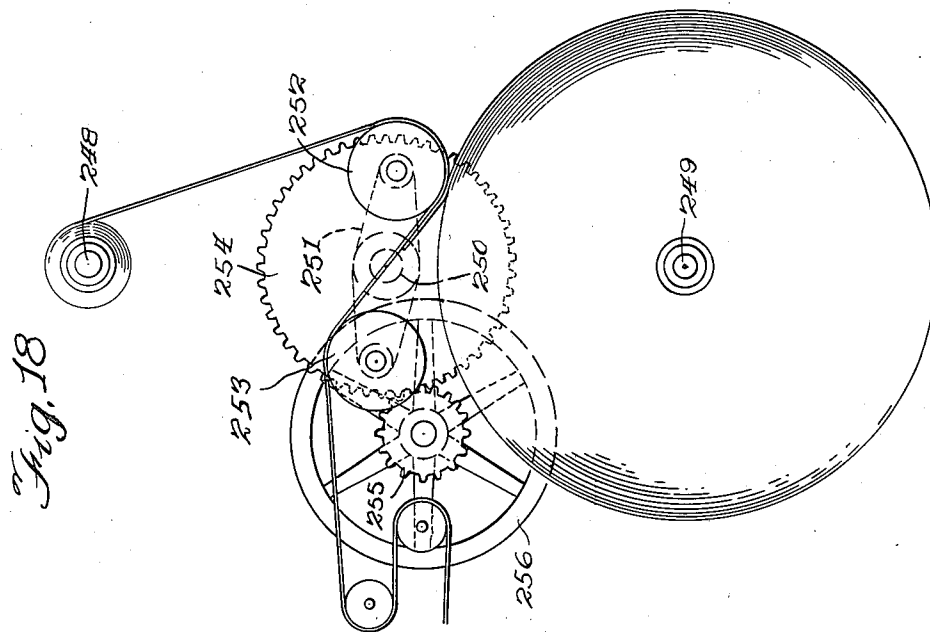
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8 SHEETS—SHEET 8.



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UNITED STATES PATENT OFFICE.

SAMUEL G. GOSS, OF GLENCOE, AND ERNEST JAMES SMITH, OF CHICAGO, ILLINOIS,
ASSIGNORS TO THE GOSS PRINTING PRESS COMPANY, OF CHICAGO, ILLINOIS, A COR-
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ROLL-CONTROLLING MECHANISM FOR PRINTING-PRESSES.

1,301,124.

Specification of Letters Patent.

Patented Apr. 22, 1919.

Application filed November 15, 1916. Serial No. 131,549.

To all whom it may concern:

Be it known that we, SAMUEL G. GOSS, a citizen of the United States, and a resident of Glencoe, in the county of Cook and State of Illinois, and ERNEST JAMES SMITH, a subject of the King of England, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Roll-Controlling Mechanism for Printing-Presses, of which the following is a specification, reference being had to the accompanying drawings.

Our invention relates to roll controlling mechanism for printing presses and it has for its principal object the provision of a new and improved form and arrangement of parts by which the rolls of paper located at any convenient point may be controlled by the pressmen in their usual positions. It is another object of our invention to provide new and improved mechanism by the use of which the end of a fresh roll of paper may be attached to the web from a substantially exhausted roll and thus threaded through the press, this result being attained preferably without decreasing the speed of operation of the press. To this end, it is one of the objects of our invention to provide means for setting a fresh roll of paper into rotation prior to the pasting operation by which the web from the fresh roll is attached to the web already running through the press, such rotating means being adapted preferably to give the web from the fresh roll the same speed as that of the web being printed upon. It is another object of our invention to provide improved means by which the web from a fresh roll so rotated at the desired speed may be pasted to the web from the exhausted roll, suitable means being provided for severing the web from the exhausted roll when the pasting operation has been accomplished. It is another object of our invention to improve devices of this type in sundry details hereinafter pointed out. The preferred means by which we have accomplished our several objects are illustrated in the drawings and are hereinafter specifically described. That which we believe to be new and desire to cover by this application is set forth in the claims.

In the drawings:—

Figure 1 is a view of a mechanism embodying the preferred form of our improve-

ments, with the rolls of paper located in a room or recess below the floor upon which the press is located, the view being taken from one side of the press looking toward the ends of the rolls;

Fig. 2 is a fragmentary view showing the means for securing the end of the web of the fresh roll and showing a supply of paste applied to such end of the web preparatory to the operation of starting such fresh web through the press, the showing of this figure being in connection with the lower web of Fig. 1 as seen from the right therein;

Fig. 3 is a diagrammatic view showing a changed position of the mechanism for connecting the web from a fresh roll in the upper position to the running web from the substantially exhausted roll in the lower position;

Fig. 4 is a fragmentary view, being a section taken substantially on line 4—4 of Fig. 1;

Fig. 5 is a fragmentary view illustrating part of the mechanism shown in Fig. 3, as seen from the right in said figure;

Fig. 6 is a view similar to Fig. 1, but illustrating a modified form of construction; the means for driving the roll-rotating belts being omitted as unnecessary in view of the showing in Fig. 1;

Fig. 7 is a diagrammatic view of the mechanism of Fig. 6 in position for pasting the web from the lower roll to the web from the substantially exhausted upper roll;

Fig. 8 is a diagrammatic view of the mechanism of Fig. 6 in position for pasting the web from the upper roll to the web from the substantially exhausted lower roll;

Fig. 9 is a view similar to Fig. 1, but showing another modified form of mechanism;

Figs. 10 and 11 illustrate changed positions of the mechanism of Fig. 9 for effecting the desired change of feed from one roll to the other;

Fig. 12 is a fragmentary view, being a section taken substantially on line 12—12 of Fig. 9;

Fig. 13 is a fragmentary view, being a view of the means shown in Fig. 9 for driving the lower one of the roll-rotating belts as seen from the left in said figure;

Fig. 14 is a diagrammatic view showing a modified form of mechanism, being illus-

trated in position for joining the web from a fresh upper roll to the web from the substantially exhausted lower roll;

Fig. 15 is a diagrammatic view similar to Fig. 14, but showing the position of the parts for joining the web from a fresh lower roll to the web from a substantially exhausted upper roll;

Fig. 16 is a diagrammatic view showing the normal position of the rollers shown in Figs. 14 and 15 for effecting the desired juncture of the webs;

Fig. 17 is a diagrammatic view showing still another modified form of mechanism, the parts being shown in position for joining a web from the upper roll to the web from the substantially exhausted lower roll;

Fig. 18 is a view similar to Fig. 17, but showing the parts in position for joining the web from a fresh lower roll to the web from the substantially exhausted upper roll.

Referring to Figs. 1 to 5, inclusive, in which corresponding parts are indicated by the same reference characters—

25 indicates a frame, which, in the construction shown, is located in a room or chamber underneath the floor 26 upon which is located a printing press 26^a. The frame 25 at each side thereof is provided with a pair of horizontally-extending arms 27 upon which are adapted to be placed the spindles 28—29 of rolls of paper preparatory to being rolled into operative position in suitable bearings 30. Each of the spindles 28—29 is provided with a brake-sheave 31 of any suitable type adapted to be clamped frictionally between two pivotally-connected brake-shoes 32—33 which are connected at their upper ends by means of a bolt 34. In the construction shown the bolt 34 is pivotally connected with the shoe 33 and is slidable longitudinally of itself through a suitable opening in the shoe 32, a spring 35 being interposed between the shoe 32 and a nut 36 secured by screw-threads upon the end of the bolt. The nut 36 is provided with a hand wheel 37 by which it may be turned for tightening the shoes 32—33 upon the sheave through the medium of the spring 35. The roll spindles 28—29 are adapted to be shifted longitudinally of themselves through the medium of the brake-shoes 32—33 by means of screw-threaded bolts 38 having suitable connection with the frame 25 whereby upon the rotation of the bolts the brake-shoes are shifted toward and away from the frame. Each of the bolts 38 is provided with a hand wheel 39 by the use of which the bolt may be rotated for effecting the desired adjustment.

Means is provided for adjusting the tension upon the sheave 31 and also for shifting the roll spindles laterally of the frame 25 from the press room. A shaft 40 extends downward from the press room through a

suitable opening in the floor 26, being provided at its lower end with a spiral gear 41 which is adapted to mesh with a spiral gear 42 mounted upon a stub-shaft on the frame 25. The spiral gear 42 has fixedly connected with it a bevel gear 43, meshing with a bevel gear 44 mounted upon the upper end of a flexible shaft 45 provided at its free end with a socket 46 adapted to be detachably connected with either one of the nuts 36 as desired. The upper end of the flexible shaft 45 is supported by a bracket 47 which is rotatable about the axis of the gears 42 and 43 whereby the shaft 45 may be free to assume the desired position for connection with either one of the bolts 34 as may be desired. Upon the rotation of the shaft 40 by any suitable means connected therewith at any suitable point therealong, the shaft 45 and the nut 36 will be given a corresponding rotation in the desired direction for adjusting the tension of the spring 35. A similar shaft 48 is adapted through the medium of spiral gears 49—50, bevel gears 51—52, flexible shaft 53 and socket 54 to effect a rotation of either one of the bolts 38 for adjusting the spindles 28—29 transversely of the frame 25.

Coming now to the means for rotating the full roll of paper when it is desired to join the web therefrom to the web from the substantially exhausted roll, 55 indicates a shaft extending down from the press and adapted to be driven from any suitable driven part of the press. 56 indicates a shaft extending transversely of the frame 25 and connected with the shaft 55 by means of bevel gears 57—58 whereby the shaft 56 is driven in counterclockwise direction in Fig. 1. The shaft 56 has revolvably mounted upon its ends sectors 59 each of which has adjustably mounted therein a bar 60, upon the upper end of which bars is revolvably mounted a shaft 61. The shafts 56 and 61 are provided with sheaves 62—63 upon which are mounted one or more belts 64, there being preferably two of such belts. The sheaves 62 for the belts 64 are fixedly mounted upon the shaft 56 whereby upon the rotation of the shaft 55 the belts 64 are driven in the direction indicated by the arrow in Fig. 1. Upon a transversely-extending shaft 65 a short distance below the shaft 56 are fixedly mounted two sectors 66 meshing with the sectors 59 whereby upon a stroke of a lever 67 fixedly mounted upon the shaft 65 the sectors 59 are rotated about the shaft 56, swinging the arms 60 in either direction as desired for carrying the belts 64 to the required position relative to the roll of paper upon the spindle 28.

A similar system of driving belts and operating means therefor is provided adjacent to the spindle 29, comprising a shaft 68 driven from the shaft 55 by means of bevel

gears 69—70. Sectors 71 revolubly mounted upon the shaft 68 adjustably support arms 72 provided at their lower ends with a shaft 73. Belts 74 are mounted upon sheaves 75—76 mounted upon the shafts 68—73 respectively, the sheaves 75 being fixedly mounted upon the shaft 68 whereby the said belts are driven continuously in the direction indicated by the arrow adjacent thereto in Fig. 1. A shaft 77 extends across the frame 25 a short distance above the shaft 68 having fixedly mounted thereon at its ends sectors 78 which mesh with the sectors 71 whereby upon the rotation of the shaft 77 the belts 74 may be swung toward and from the spindle 29. The shafts 65 and 77 are connected together by means of arms 79—80 connected at their ends by a rigid link 81. The construction and arrangement are such that when the lever 67 is in an intermediate position both sets of belts 64 and 74 are held in position so as to be out of engagement with any rolls of paper upon the spindles 28—29. When the lever 67 is moved downward into the position shown in Fig. 1, the belts 74 are brought into position to engage a full roll of paper upon the spindle 29. When the lever 67 is moved upward to its intermediate position the belts 74 are moved out of position to engage the lower roll, and when the lever 67 approaches its uppermost position the belts 64 are moved into position to engage a full roll upon the spindle 28. The shaft 55 is designed to be driven at such a rate as to give the belts 64—74 a speed of movement equal to that of the web running through the press, whereby the belts are adapted to give to the roll of paper a surface speed likewise equal to the speed of movement of the web being printed.

The means provided for effecting the joining of the web from a fresh roll to the web from a substantially exhausted roll comprises a shaft 82 which is slidably mounted in the frame 25 so as to be movable upward along slots 83 against the action of springs 84. Revolubly mounted upon the shaft 82 is a roller 85. Fixed upon the shaft 82 at each end thereof is an arm 86, the outer ends of said arms being joined by a shaft 87 upon which is mounted a roller 88 so as to revolve between said arms. Fixed upon one end of the shaft 82 is a sector 89 adapted to be rotated by a sector 90 pivotally mounted upon the frame 25, the sector 90 in turn being operated by means of a foot pedal 91 connected with the sector by means of a link 92 and an arm 93 which in the construction shown is formed integral with said sector. The pedal 91 is provided with an upwardly-extending arm 94 to which is connected one end of a spring 95, the other end of which is connected to the frame 25 whereby the spring resists downward movement of the

pedal 91. As will be readily understood, when the pedal 91 is given a turning movement in clockwise direction in Fig. 1 against the action of the spring 95 the sector 90 is turned in counterclockwise direction and the sector 89 and shaft 82 are turned in clockwise direction in said figure, serving to swing the arms 86 from the position shown in Fig. 3 to that shown in Fig. 1. A lug 96 extending out from the framework 25 serves to limit the movement of the arms 86 in counterclockwise direction in Figs. 1 and 3. Rods 97 are revolubly connected at their upper ends to the ends of the shaft 82, being connected at their lower ends to arms 98 extending from a shaft 99 whereby upon the rotation of said shaft 99 in clockwise direction in Fig. 1 the shaft 82 is moved upward against the action of the springs 84. A pedal 100 is fixed upon the shaft 99 for rotating said shaft against the action of the springs 84.

With the web 101 from a roll of paper 102 threaded under an equalizing roller 103, and with such web being drawn from the roll by the pull of the press, with the shaft 55 in operation driving the belts 64 and 74 at the desired speed, and with the flexible shafts 45 and 53 connected with the bolts 34 and 38 of said roll located upon the spindle 28, as the size of the roll 102 diminishes, a roll 104 upon the spindle 29 is prepared for use. As is shown in Fig. 2, the end of the web of the roll 104 is trimmed off and is secured to the roll in any desired manner as by pasters 105 which are adapted to permit of a ready disengagement of the end of the web from its secured position. Paste or glue of a suitable type is then spread upon the end of the web, space being left to provide for the belts 74 to engage the surface of the roll, as hereinafter described, without being brought into contact with such paste, the paste being applied substantially as indicated at 106 in Fig. 2. When the time comes when it is desired to attach the web from the roll 104 to the running web 101, the lever 67 is given a downward movement, throwing the belts 74 into the position shown in Fig. 1 so as to contact the roll 104, setting such roll into rotation at the same surface speed as that of the running web. The pedal 91 is then pressed downward against the action of the spring 95, moving the roller 88 from the position shown in Fig. 3 until it is brought into contact with the running web 101 and then still further until the roller 88 is brought substantially to the position shown in Fig. 1. At the desired moment the roller 88 is given its final downward movement, bringing the running web 101 with considerable force into contact with the roll 104 which is being driven at the same surface speed, as above set forth. As soon as the roll 104 has

rotated sufficiently to bring the paste or glue on the end of its web into contact with the running web 101, the stickers 105 are instantly loosened or broken and the web 5 from the roll 104 is fed through the machine for continuing the printing operation. Immediately upon the completion of the splice of the new web to the old web, the old web is adapted to be cut or torn away by any 10 suitable means. The means shown in the drawings for cutting the web from the roll 102 after the web from the roll 104 has been connected up, comprises a knife 107 revolv- 15 ably mounted between the arms 86 and adapted to be rotated by means of a cord 108 passing over a pulley 109 mounted so as to revolve with the knife 107. A spring 110 is provided which serves to hold the knife 107 yieldingly against turning relative to 20 the arms 86. When the splice has been completed, the lever 67 is to be again manipulated to swing the belts 74 out of contact with the roll. The flexible shafts 44—53 are adapted to be shifted from the substantially 25 exhausted roll to the new roll either before or after the splicing operation as may be desired.

After the roll 104 has been threaded through the printing press as above de- 30 scribed, a new roll 111 is placed in position upon the spindle 28 ready to be joined at the proper time to the running web 112 coming from the roll 104. When the roll 104 is substantially exhausted, the end of the web of 35 the roll 111 is prepared substantially as was described above in connection with the corresponding operation upon the roll 104, a proper space being left in the application of the paste for the belts 64 to engage the 40 roll 111. At the proper time the lever 67 is moved upward so as to carry the belts 64 into contact with the roll 111 by which such roll is given a rotation at a surface speed equal to that of the web 112. The foot- 45 lever 100 is then pressed downward, serving to raise the shaft 82 and the roller 85, bringing the running web 112 at the desired moment into firm contact with the rotating roll 111. When the splice has been made 50 between the gummed end of the web from the roll 111 and the running web 112, the web 112 is torn or cut, in the construction shown being severed by a knife 113 adapted to be swung about a shaft 114, the swinging 55 of the shaft and the knife being accomplished by means of a cord 115 working over a drum 116. A spring 117 resists the turning movement of the knife and serves when the cord 115 is released to return the knife 60 to its normal position.

Referring now to Figs. 6, 7 and 8, 118 indicates the frame, having mounted thereon spindles 119—120 provided with brake- 65 sheaves 121 which are adapted to be clamped between brake-shoes 122—123 which are

mounted between levers 124 and 125. The levers 124 and 125 of each set of mechanism are connected by a cross-head 126 which is capable of being shifted laterally of the frame by means of a screw-threaded bolt 70 127 having suitable connection with the frame as is well understood in mechanisms of this type. Each bolt 127 is provided with a spiral gear 128 which is adapted to be rotated by means of an intermeshing spiral 75 gear 129 mounted upon a vertical shaft 130 extending downward from the press room. The shaft 130 is provided with a hand-wheel 131 by which it may be turned for shifting the spindles 119 and 120 longitudinally of 80 themselves as may be desired.

The brake-shoes 122 and 123 are adapted to be tightened upon the brake-sheaves 121 by means of suitable bolts 132 in the well understood manner, such bolts 132 being 85 connected together by means of a vertical shaft 133, universal joints 134 of any suitable type being interposed in the connections between the bolts 132 and the shaft 133. The shaft 133 is adapted to be rotated 90 for adjusting the tension of the brake-shoes, either by means of a hand-wheel 135 fixed upon the shaft, or through the medium of a chain or belt 136 which extends upward to the press room, such belt being connected to 95 the shaft 133 by means of a pulley 137 which is fixedly connected with a bevel gear 138 meshing with a bevel gear 139 mounted upon said shaft.

Belts 140 are mounted upon sheaves 141— 100 142 supported by shafts 143—144, respectively, the sheaves 142 being fixed upon the shaft 144 so as to be driven thereby. The shaft 143 is movably supported relative to the shaft 144 by means of arms 145 which 105 are fixedly connected with sectors 146 revolvably mounted upon the ends of the shaft 144. Similar belts 147 are supported opposite the spindle 120 by means of sheaves 148 and 149 mounted upon shafts 150 and 151, 110 respectively, the shaft 151 being supported relative to the shaft 150 by means of arms 152 which are fixedly connected with sectors 153 revolvably mounted upon the ends of the shaft 150. The sheaves 148 are fixed upon 115 the shaft 150 for rotation thereby. No means is shown for driving the shafts 144 and 150, such shafts being preferably driven by means such as those shown in Fig. 1 for driving the shafts 56 and 68. The belts 120 140 and 147 are swung toward and from the rolls located upon the spindles 119 and 120 by means of toothed bars or cross-heads 154 fixedly mounted upon opposite ends of a shaft 155, said cross-heads being toothed 125 at their ends so as to engage the sectors 146 and 153. One of the cross-heads 154 is provided with a hand-lever 156 by which said cross-head and the shaft 155 may be turned as desired for swinging the belts 140 and 130

147 toward and from the spindles 119—120 as may be required.

The operation of the mechanism shown in Fig. 6 is similar to that described above in connection with the mechanism of Figs. 1 to 5, so far as the preparation of the new roll and its being brought to proper speed of rotation are concerned, but a different form of mechanism is provided for carrying the running web into forcible contact with the rotating roll for making the splice. In the construction here shown, a shaft 157 is provided having fixedly mounted upon its ends a pair of arms 158, between the outer ends of which is revolubly mounted a roller 159. The shaft 157 is also provided with a worm gear 160 with which meshes a worm 161 mounted upon a short shaft 162 provided with a hand-wheel 163. Revolubly mounted upon the shaft 157 between the arms 158 is a sleeve 164 which is provided with arms 165 which have revolubly mounted between their outer ends a roller 166. Suitable means is to be provided for rotating the sleeve 164, such means being preferably a duplication of the means provided for rotating the shaft 157.

When the upper roll is substantially exhausted, as is shown in Fig. 7, the lower roll prepared as above described is set into rotation through the medium of the belts 147. The hand-wheel 163 is then turned in a direction to swing the arms 158 in clockwise direction in Fig. 6 so as to bring the roller 159 into contact with the running web which upon the further movement of the said roller 159 is carried down into contact with the lower roll, serving to pick up the gummed end of the web from the lower roll as above described. The web from the upper roll is then severed by means of a suitable blade 167 which is revolubly mounted between the ends of the arms 158, being adapted to be operated by a cord 168 working upon a drum 169. The blade 167 is preferably provided with resilient means for holding the blade in normal position relative to said arms, and the arms 158 are preferably provided with resilient means tending to hold such arms in normal position as shown in Fig. 6. When the lower roll in turn is about to be exhausted, the sleeve 164 is rotated in counter-clockwise direction in Fig. 6 to move the roller 166 in counterclockwise direction into contact with the running web from the lower roll, the further movement of the roller in this direction serving then to bring the running web into contact with the upper roll of paper which has in the meantime been set into rotation at the desired speed. When the splice has been made, as will be readily understood from the description given above, the web from the lower roll is severed by means of a blade 170 revolubly mounted be-

tween the arms 165, the blade 170 being turned into operative position by means of a cord 171 working upon a drum 172 fixedly connected with said blade.

Coming now to Figs. 9 to 13, inclusive, a somewhat different form of construction is shown by means of which the movement of the impression roller for bringing the running web into contact with the fresh roll may be accomplished by the use of a foot-lever. In this construction a frame 173 supports roll spindles 174 and 175 adapted to be provided with rolls of paper which are to be controlled by suitable braking and lateral-shifting means such as have been described in connection with the other constructions. A shaft 176 extends transversely of the frame 173, having rigidly mounted thereon a pair of arms 177, between the lower ends of which is mounted a shaft 178 which supports a pulley or sheave 179 about which extends a roll-driving belt 180 which is supported at its upper end by a sheave or pulley 181 revolubly mounted upon the shaft 176. The sheave or pulley 181 has fixedly connected therewith a gear 182 which meshes with a gear 183 fixed upon a transverse shaft 184 which is driven by means of bevel gears 185—186 from a vertically-extending shaft 187 which extends down from the press room above. The shaft 176 is adapted to be rotated by means of a sector 188 fixedly mounted upon its outer end, which, in turn, is rotated or swung by means of a sector 189 provided with a hand-lever 190. As will be readily understood, when the lever 190 is given a downward stroke the belt 180 will be swung to the right in Fig. 9 so as to be brought into contact with a fresh roll of paper located upon the spindle 175. Another shaft 191 extending transversely of the frame 173 is provided likewise with two arms 192 fixed thereon, between the upper ends of which arms is journaled a shaft 193 which supports a sheave or pulley 194. The pulley 194 and a pulley 195 revolubly mounted upon the shaft 191 have mounted about them a belt 196. The sheave or pulley 195 is preferably connected by means of gears with a shaft 197 extending across the frame 173 a short distance below the shaft 191, the shaft 197 being driven from the shaft 187 by means of bevel gears 198—199. The belt 196 is adapted to be swung toward and from the spindle 174 by means of arms 200—201 fixed upon the shafts 191 and 176, respectively, the outer ends of such arms being connected by a rigid link 202. By means of this connection, when the belt 180 is moved outward away from the spindle 175, the belt 196 will be moved toward the spindle 174 into position to contact a full roll of paper on such spindle. The shaft 187 is to be driven at such a speed as to drive the belts 180 and

196 at the same surface speed as that of the running web.

Coming now to the means for bringing the running web into contact with the full roll of paper provided with a supply of paste upon the end of its web, 203 indicates cross-heads revolubly mounted upon the frame 173 at the sides thereof, the cross-head shown in solid lines in Figs. 10 and 11 being fixed upon a sleeve 204 extending through the frame-work. The cross-heads 203 at opposite sides of the machine are connected by two shafts 205 and 206 upon which are revolubly mounted two rollers 207—208, respectively, which are of such a size as to be in contact with each other. The roller 207 has fixedly connected with it a gear 209 which meshes with a gear 210 mounted upon a short shaft 211 which extends through the sleeve 204 (see Fig. 12), being provided on its outer end with a gear 212 fixedly mounted thereon. The gear 212 meshes with an idler gear 213 revolubly mounted upon the frame 173 (see Fig. 9) which in turn meshes with a gear 214 which is fixed upon the shaft 184 (see Fig. 13). The size and proportions of the gears are designed to be such that the rollers 207—208 shall be driven in opposite directions at a surface speed equal to that of the running web which is designed to run between such two rollers.

Means is provided for swinging the cross-heads 203 about their axis comprising a gear 215 fixedly mounted upon the outer end of the sleeve 204. A sector 216 pivotally mounted upon the frame 173 meshes with the gear 215 for rotating said gear in either direction as desired. Links 217—218 are connected at their upper ends to the sector 216, being connected at their lower ends to foot-levers 219—220, respectively, upon opposite sides of the axis upon which said two foot-levers are mounted. The construction is such that upon a downward pressure upon the foot-lever 220 the sector 216 is moved in clockwise direction, serving to turn the cross-heads 203 in counterclockwise direction in Fig. 9, while upon a downward pressure upon the lever 219 the cross-heads 203 are turned in clockwise direction in said figure.

Revolubly mounted upon the shaft 205 at the ends thereof are two arms 221 which carry between them a blade 222, the arms 221 being held normally by springs 223 turned at an angle to the cross-heads 203, substantially as shown in Fig. 9. The shaft 206 likewise has revolubly mounted upon its ends two arms 224, the ends of which are connected together by means of a blade 225. The arms 224 are normally held by a spring 226 in turned position relative to the cross-heads 203, substantially as shown in Fig. 9. A cord 227 is connected to one of the arms 221 of the blade 222 for moving such blade

about the shaft 205 against the action of the spring 223, and one of the arms 224 of the blade 225 is provided with a cord 228 by which such blade can be moved about the shaft 206 against the action of the spring 226. When the cross-heads 203 are moved in counterclockwise direction from the position shown in Fig. 9, a stud or roller 229 mounted upon one of the arms 221 of the blade 222 is brought into contact with a suitable stop 230 so as to hold the blade 222 out of contact with the running web.

When a fresh lower roll is to be connected up with the running web from a substantially exhausted upper roll, the lower roll is set into rotation by means of the belt 180; the cross-heads 203 are then rotated in clockwise direction by a downward pressure upon the pedal 219, serving to bring the roller 207 into contact with the running web and to press such web slowly downward into contact with the fresh roll upon the spindle 175, such roll having been prepared as above described with a suitable supply of paste on the end of its web; when the proper splice has been made the operator by a pull upon the cord 227 promptly brings the blade 222 down into contact with the running web from the upper roll for severing it. When a fresh upper roll is to be attached to a substantially exhausted lower roll, the cross-heads 203 are to be rotated in counterclockwise direction in Fig. 9 by a downward pressure upon the lever 220,—after the upper roll has been properly prepared and set into rotation. By this movement of the cross-heads 203, the roller 208 is brought into contact with the running web which is pressed upward into contact with the rotating upper roller for completing the splice. A pull upon the cord 228 serves to swing the blade 225 against the action of the spring 226 serving to sever the web coming from the lower roll.

Referring now to Figs. 14, 15 and 16, 231—232 indicate the spindles adapted to receive the rolls of paper to be used alternately for the printing operation, the web from the rolls being directed between two driven rollers 233—234 which are spaced a short distance apart to provide for a slippage of the paper relative to said rollers. A shaft 235 extending transversely of the machine has fixed upon its ends arms 236 between the outer ends of which is revolubly mounted a roller 237. A shaft 238 likewise has fixedly mounted upon it two arms 239 between the outer ends of which is revolubly mounted a roller 240. The shafts 235 and 238 have fixedly mounted thereon gears 241—242, respectively, which mesh with a gear 243 which is adapted to be rotated by a chain or belt 244 extending over suitable supporting wheels 245—246, the supporting wheel 245 being fixedly connected with the gear 243,

and the supporting wheel 246 having fixedly connected with it a hand-wheel 247. By a proper manipulation of the hand-wheel 247 the arms 236 and 239 can be swung about the shafts 235 and 238 from the position shown in Fig. 16 in either direction as desired. When a roll of paper upon the spindle 232 is substantially exhausted, and it is desired to attach to the web running from such roll the end of the web from a fresh roll upon the spindle 231, the fresh roll upon the spindle 231 is preferably set into rotation by suitable means such as that described in connection with the other constructions after the roll has been prepared in such manner as that shown in Fig. 2. The hand-wheel 247 is then rotated to move the rollers 240 and 237 upward, the roller 237 serving to bring the running web into forcible contact with the rotating upper roll for effecting the desired splice, as above described. When in turn the upper roll is substantially exhausted and it is desired to connect to the running web the end of the web from a fresh roll upon the spindle 232, the hand-wheel 247 is turned in the opposite direction whereby the roller 240 brings the web into forcible contact with the roll upon the spindle 232 which has been prepared and set in motion for the splice. By reason of the rollers 233 and 234 being spaced apart, the rollers 237 and 240 are enabled to lengthen the run of the web from the roll to the said rollers 233—234 by reason of the slippage of the running web relative to the rollers 233—234 against the action of the ordinary equalizing means without the necessity for the operator to give any additional spin to the roll spindles.

In Figs. 17 and 18 the roll spindles are indicated by the numerals 248 and 249. Midway between said spindles is mounted a shaft 250 having fixed upon its ends cross-heads 251. Between the ends of the cross-heads are revolubly mounted rollers 252—253. Fixed upon the shaft 250 is a gear 254 which meshes with a pinion 255 which has fixedly connected with it a hand-wheel 256. As will be readily understood, upon the rotation of the hand-wheel 256 the rollers 252 and 253 are revolved about the shaft 250 in either direction as desired. As will be readily understood, when the web from a full upper roll is to be attached to the running web from the substantially exhausted lower roll, the hand-wheel 256 will be rotated in clockwise direction in Fig. 17 so as to move the roller 253 in counterclockwise direction so as to carry the running web into contact with the fresh upper roll as shown in said figure. When the upper roll is substantially exhausted, the hand-wheel 256 will be rotated in the opposite direction to bring the roller 252 into position to carry the running web into forcible contact with a fresh roll of

paper in position upon the spindle 249, serving to make the desired splice in the manner heretofore described.

While we have in each instance shown one of the roll spindles located above the other spindle, with the cooperating mechanism in a corresponding position, it will be understood that we do not wish to limit our invention to this position of the spindles, except as hereinafter specifically claimed, it being evident that the position of the spindles and the cooperating parts might readily be changed without departing from our invention.

What we claim as our invention and desire to secure by Letters Patent, is—

1. A web renewing apparatus comprising supporting devices adapted to support web rolls in parallelism with each other, means for driving one of said rolls at substantially the same surface speed as the web from the other roll, parallel rollers between which the web in use travels, one of said parallel rollers being movable into contact with the surface of the web roll in one position, and the other of said rollers being arranged to swing about the axis of the other roller into contact with the surface of the web roll in the other position, and means for actuating said rollers to press the web in use into contact with one or the other of said web rolls as required to splice the web in use to the web of a fresh roll.

2. The combination of means for supporting a roll in proximity to a running web, a shaft adjacent to said roll, arms fixedly mounted on said shaft, a roller revolubly mounted between said arms adjacent to said shaft on the opposite side of said running web from that upon which said roll is supported, means for rotating said roll causing the portion of the roll adjacent to said running web to move in the same direction, means for turning said shaft for bringing said roller and said running web into contact with said rotating roll for causing said web to pick up the gummed end of the web of the roll, a web-severing device mounted between said arms adjacent to said roller, and means for operating said device for severing said running web after the web from said roll has been spliced thereto.

3. The combination of a framework, a roll supported by said framework in proximity to a running web, stationary guideways in said framework on the opposite side of said running web from that upon which said roll is supported, a roller movable in said guideways into engagement with the running web, means for rotating said roll to cause the portion of the roll adjacent to said running web to move in the same direction therewith, and means for moving said roller to carry said run-

ning web into contact with said rotating roll and cause said web to pick up the gummed end of the web of the roll.

4. The combination of a framework, a roll supported by said framework in proximity to a running web, a roller slidably mounted in said framework on the opposite side of said running web from that upon which said roll is supported, means for rotating said roll causing the portion of the roll adjacent to said running web to move in the same direction therewith, yielding means tending to hold said roller spaced away from said roll, and means for moving said roller and said running web against the action of said yielding means into contact with said rotating roll for causing said web to pick up the gummed end of the web of the roll.

5. The combination of a framework, a roll supported by said framework in proximity to a running web, a roller slidably mounted in said framework on the opposite side of said running web from that upon which said roll is supported, means for rotating said roll causing the portion of the roll adjacent to said running web to move in the same direction therewith, yielding means tending to hold said roller spaced away from said roll, and a foot-lever operatively connected with said roller adapted by a downward stroke to move said roller and said running web against the action of said yielding means into contact with said rotating roll for causing said web to pick up the gummed end of the web of the roll.

6. The combination of a framework, a roll supported by said framework in proximity to a running web, stationary guideways in said framework on the opposite side of said running web from that upon which said roll is supported, a roller movable in said guideways into engagement with the running web, means for rotating said roll to cause the portion of the roll adjacent to said running web to move in the same direction therewith, means for moving said roller to carry said running web into contact with said rotating roll and cause said web to pick up the gummed end of the web of the roll, and a web-severing device revolubly mounted on a fixed axis adjacent to the path of the running web for severing said web after the web from said roll has been spliced thereto.

7. The combination of means for supporting two rolls adjacent to each other for feeding the webs alternately therefrom, means for rotating either roll at substantially the same surface speed as that of the web fed from the other roll, means for pressing the running web against either roll when properly rotated and gummed, a foot-lever operatively connected with said pressing means adapted by a downward stroke to

carry said running web toward one roll, and a second foot-lever operatively connected with said pressing means adapted by a downward stroke to carry said running web toward the other roll.

8. The combination of means for supporting two rolls adjacent to each other for feeding the webs alternately therefrom, means for rotating either roll at substantially the same surface speed as that of the web fed from the other roll, a roller slidably mounted adjacent to one roll, a second roller swingingly mounted adjacent to the other roll, and means for moving either roller toward its adjacent roll for carrying the web which runs between said rollers into contact with either roll as desired, said swingingly-mounted roller being adapted to move from one side to the other of said slidably-mounted roller.

9. The combination of means for supporting two rolls adjacent to each other for feeding the webs alternately therefrom, means for rotating either roll at substantially the same surface speed as that of the web fed from the other roll, a roller slidably mounted adjacent to one roll, a second roller swingingly mounted about the axis of said first-named roller adjacent to the other roll, and means for moving either roller toward its adjacent roll for carrying the web which runs between said rollers into contact with either roll as desired.

10. The combination of means for supporting two rolls adjacent to each other for feeding the webs alternately therefrom, means for rotating either roll at substantially the same surface speed as that of the web fed from the other roll, a shaft slidably mounted adjacent to one roll, a roller revolubly mounted on said shaft adapted to be moved toward said roll, arms fixedly mounted on said shaft, a roller revolubly mounted between said arms adapted by the rocking of said shaft to be swung toward the other roll, means for sliding said shaft and said first-named roller toward one roll for carrying the web running between said rollers into contact with said roll, and other means for rocking said shaft for swinging the other roller toward the other roll for carrying the running web into contact with said other roll.

11. The combination of means for supporting two rolls adjacent to each other, driven members adapted to be brought into contact with said rolls respectively for rotating either of them at a surface speed substantially equal to that of the web being fed from the other roll, operating means adapted by a movement in one direction to bring one driving member into contact with one roll and adapted by a movement in the other direction to bring the other driving member into contact with the other roll, and

means for pressing the web running from either roll into contact with the other roll for picking up the gummed end of the web of said other roll.

5 12. The combination of means for supporting two rolls adjacent to each other, driven endless belts adapted to be moved into contact with said rolls respectively for
10 rotating either of said rolls at a surface speed substantially equal to that of the web being fed from the other roll, a lever operatively connected with said belts adapted by a stroke in one direction to bring one belt
15 into contact with one roll and adapted by a stroke in the other direction to bring the other belt into contact with the other roll, and means for pressing the web running from either roll into contact with the other roll for picking up the gummed end of the
20 web of said other roll.

13. The combination of means for supporting two rolls, means for joining the leading end of a fresh roll to the substantially exhausted web from the other roll, and
25 roll-controlling means adapted to be connected alternatively with either of said rolls for controlling the tension and lateral adjustment of the webs.

14. The combination of means for supporting two rolls, means for joining the leading end of a fresh roll to the substantially exhausted web from the other roll, and roll-controlling means comprising a rotatable member, and a flexible shaft operatively
35 connected with said rotatable member and adapted to be operatively connected with either roll as desired.

15. The combination of means for supporting two rolls, means for joining the leading end of a fresh roll to the substantially exhausted web from the other roll, brakes operatively connected with said rolls respectively provided with rotary adjusting devices, a rotary member, means for rotating
40 said member as desired, and a flexible shaft operatively connected with said rotary member and adapted to be operatively connected alternatively with the adjusting device of either brake.

16. The combination of means for supporting two rolls, means for joining the leading end of a fresh roll to the substantially exhausted web from the other roll, means operatively connected with each roll adapted by rotation to shift the roll longitudinally of itself, a rotary member, means
55 for rotating said member as desired, and a flexible shaft operatively connected with said rotary member and adapted to be operatively connected alternatively with the shifting means of either roll.
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17. The combination of means for supporting two rolls, means for joining the leading end of the web of a fresh roll to the substantially exhausted web from the other
65 roll, tension devices associated with said rolls, respectively, and controlling means adapted to be connected alternatively with either of said tension devices for controlling the tension of the webs.
70

18. The combination of means for supporting two rolls, means for joining the leading end of the web of a fresh roll to the substantially exhausted web from the other roll, and roll-controlling means adapted to
75 be connected alternatively with either of said rolls for controlling the lateral adjustment of the webs.

19. The combination with means for supporting two web rolls in parallelism with each other for feeding the webs therefrom alternately, and means for rotating either roll at substantially the same surface speed as that of the web in use, of devices for
80 pressing the web in use against either roll, and separate levers for actuating said pressing devices to carry the web in use into contact with one or the other of said web rolls.
85

20. A web renewing apparatus comprising supporting devices adapted to support web rolls in parallelism with each other, means for driving one of said rolls at substantially the same surface speed as the web from the other roll, parallel rollers between
90 which the web in use travels, one of said parallel rollers being movable into contact with the surface of the web roll in one position, and the other of said rollers being movable into contact with the surface of the web roll in the other position, and separate levers
100 for actuating said rollers to press the web in use into contact with one or the other of said web rolls.

21. A web renewing apparatus comprising supporting devices adapted to support web rolls in parallelism with each other, means for driving one of said rolls at substantially the same surface speed as the web from the other roll, parallel rollers between
105 which the web in use travels, one of said parallel rollers being movable into contact with the surface of the web roll in one position, and the other of said rollers being arranged to swing about the axis of the other roller into contact with the surface of the web roll in the other position, and separate
110 levers for actuating said rollers to press the web in use into contact with one or the other of said web rolls.
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