

No. 667,680.

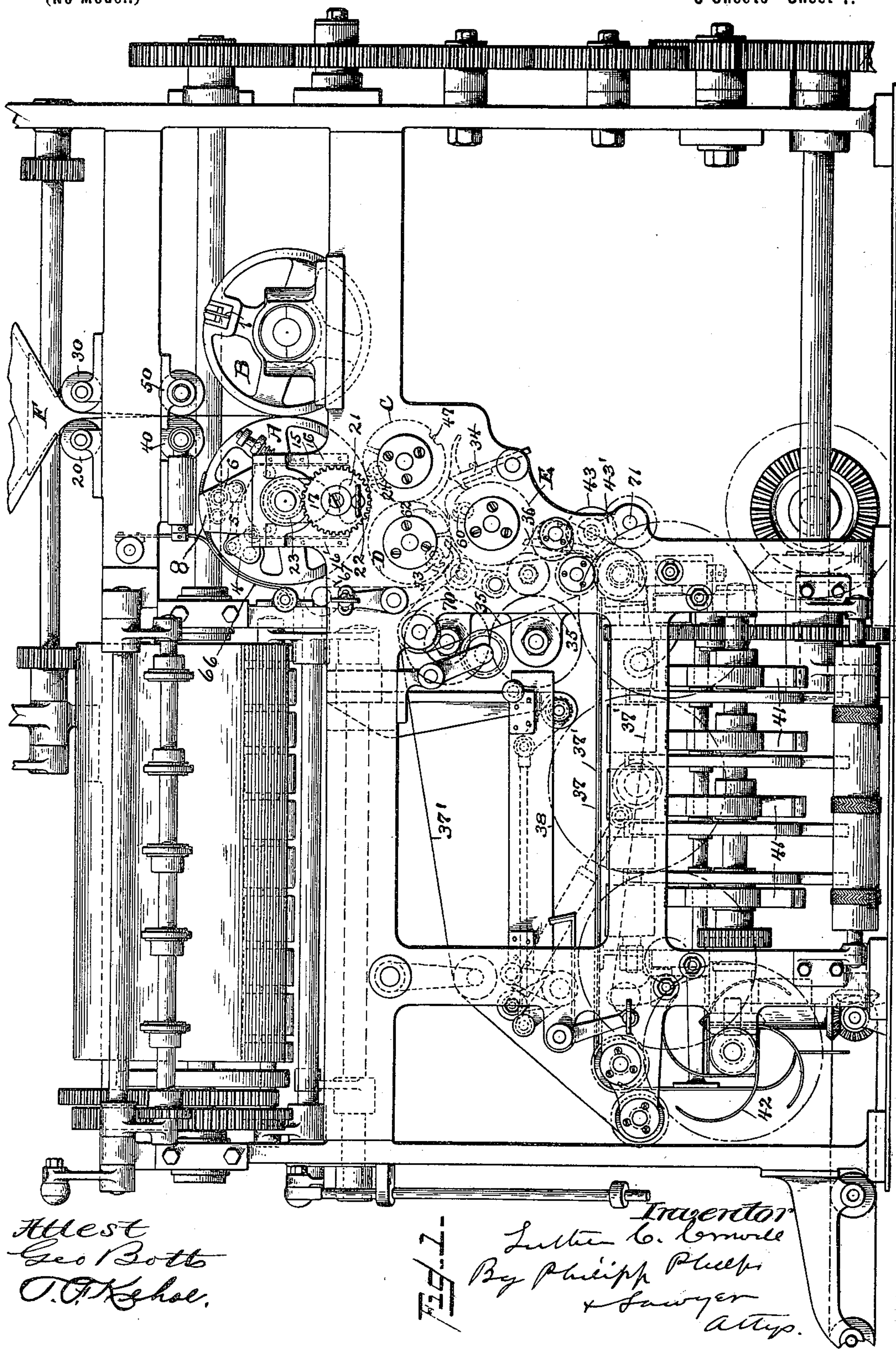
Patented Feb. 12, 1901.

L. C. CROWELL.
PRINTING PRESS.

(No Model.)

(Application filed Dec. 31, 1897.)

6 Sheets—Sheet 1.



No. 667,680.

Patented Feb. 12, 1901.

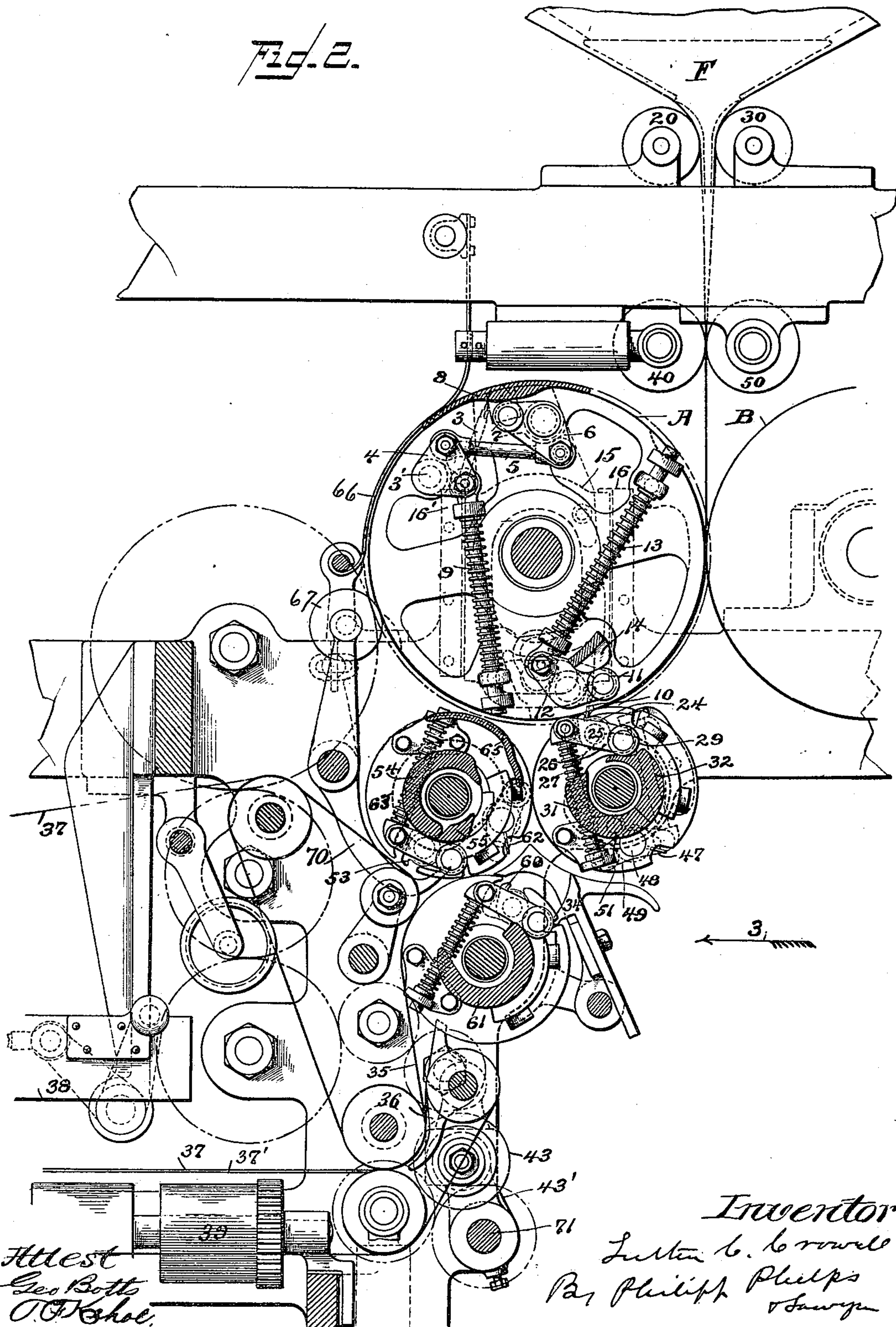
L. C. CROWELL.
PRINTING PRESS.

(No Model.)

(Application filed Dec. 31, 1897.)

6 Sheets—Sheet 2.

Fig. 2.



Attest
Geo. Botts
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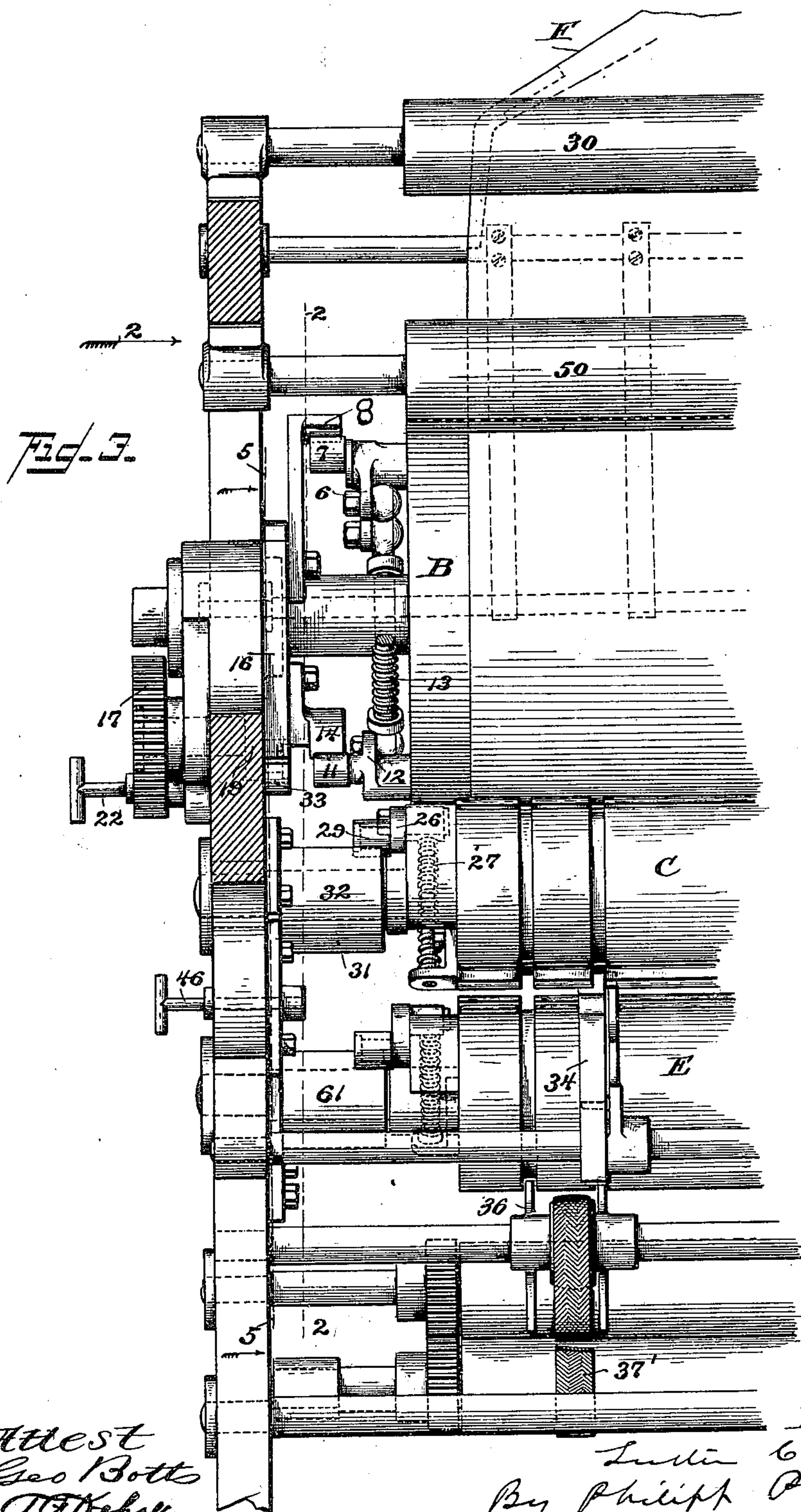
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(No Model.)

6 Sheets—Sheet 3.



No. 667,680.

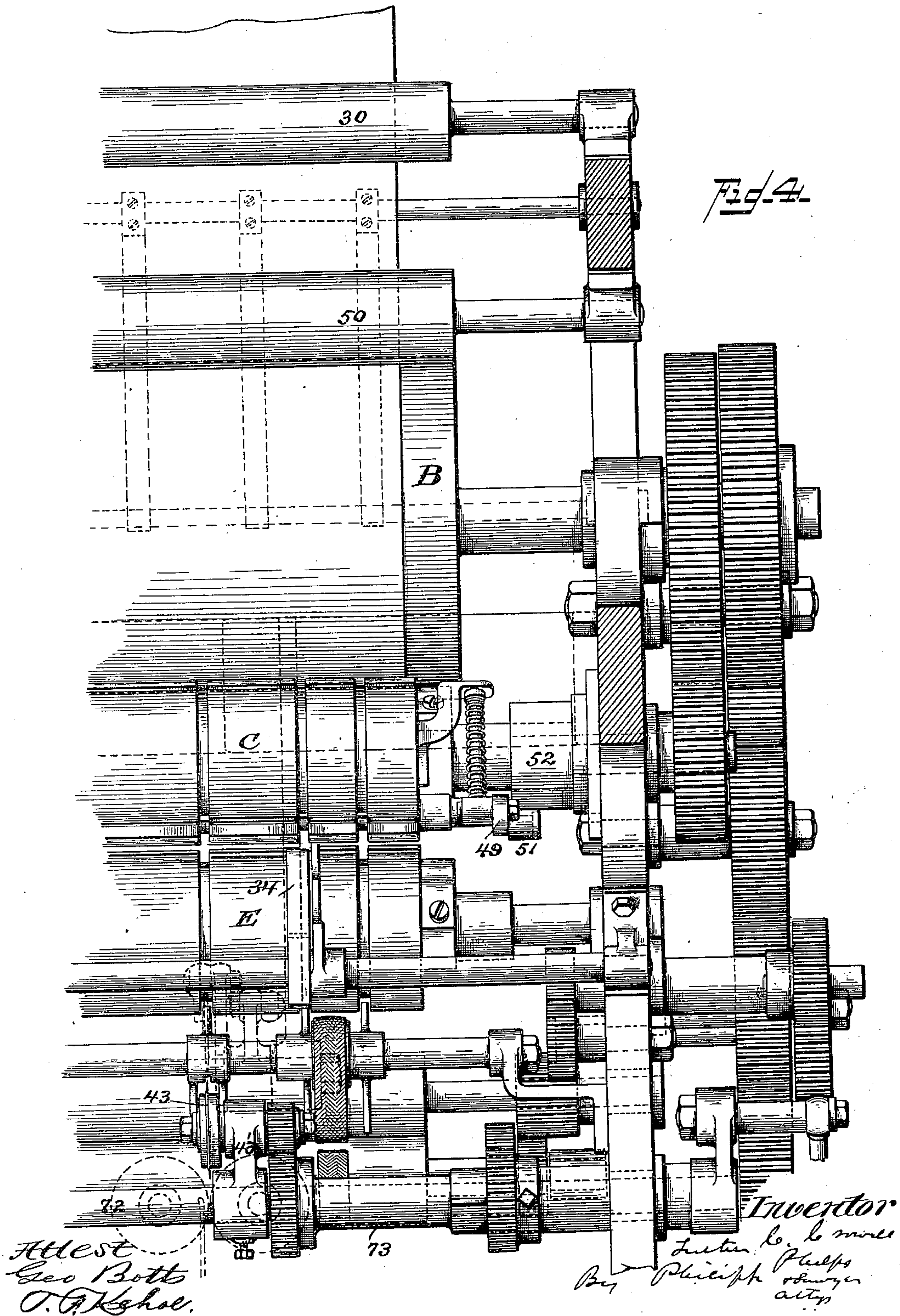
Patented Feb. 12, 1901.

L. C. CROWELL.
PRINTING PRESS.

(Application filed Dec. 31, 1897.)

6 Sheets—Sheet 4.

(No Model.)



No. 667,680.

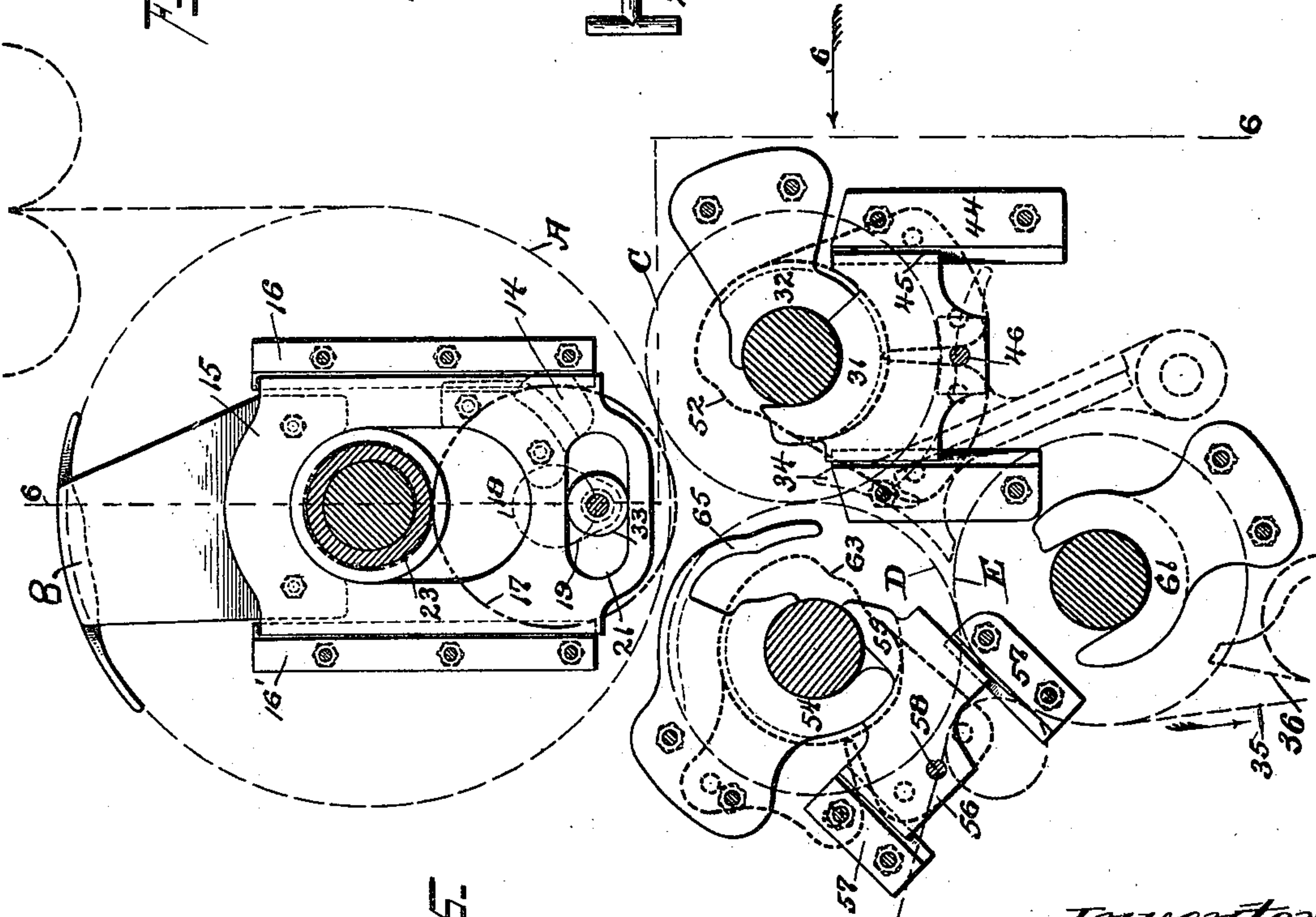
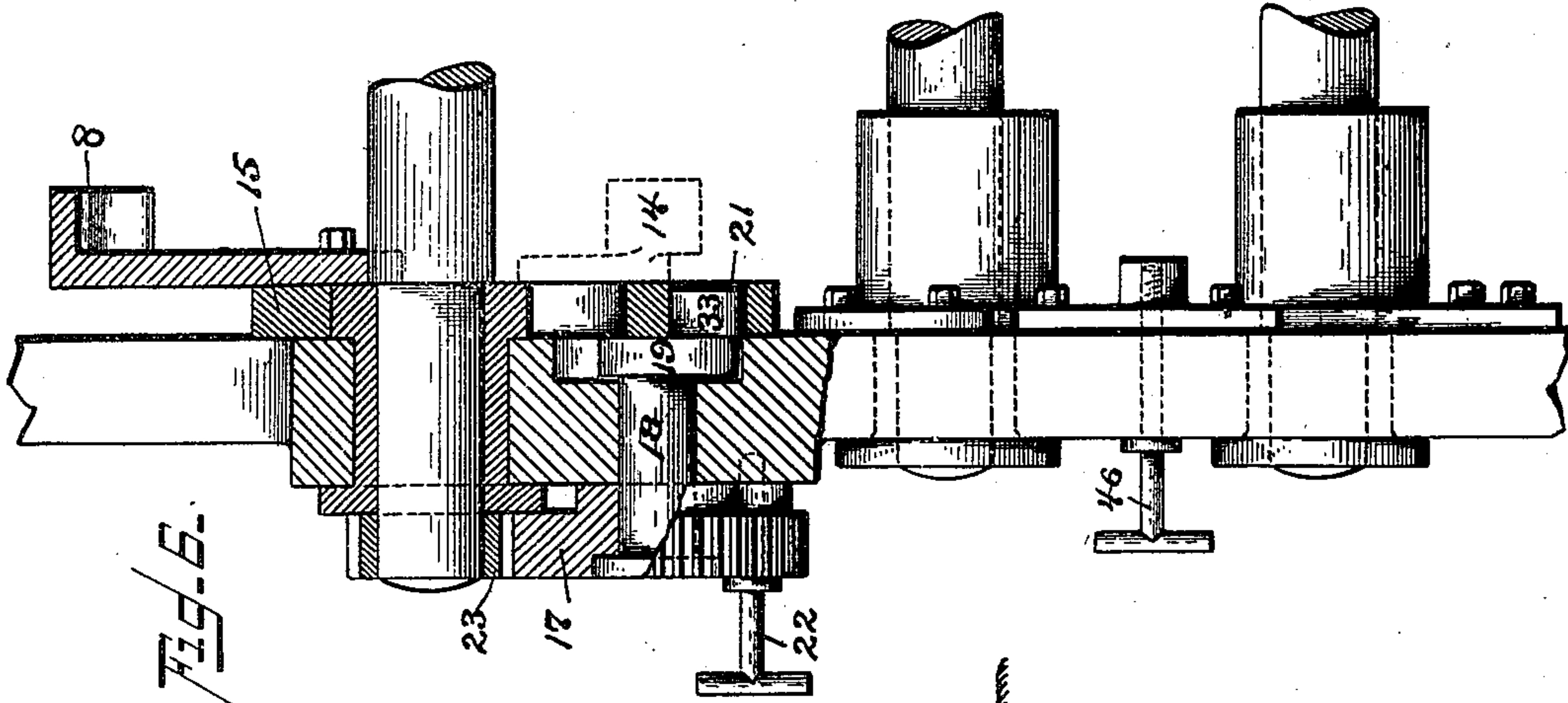
Patented Feb. 12, 1901.

L. C. CROWELL.
PRINTING PRESS.

(Application filed Dec. 31, 1897.)

(No Model.)

6 Sheets—Sheet 5.



Attest
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No. 667.680.

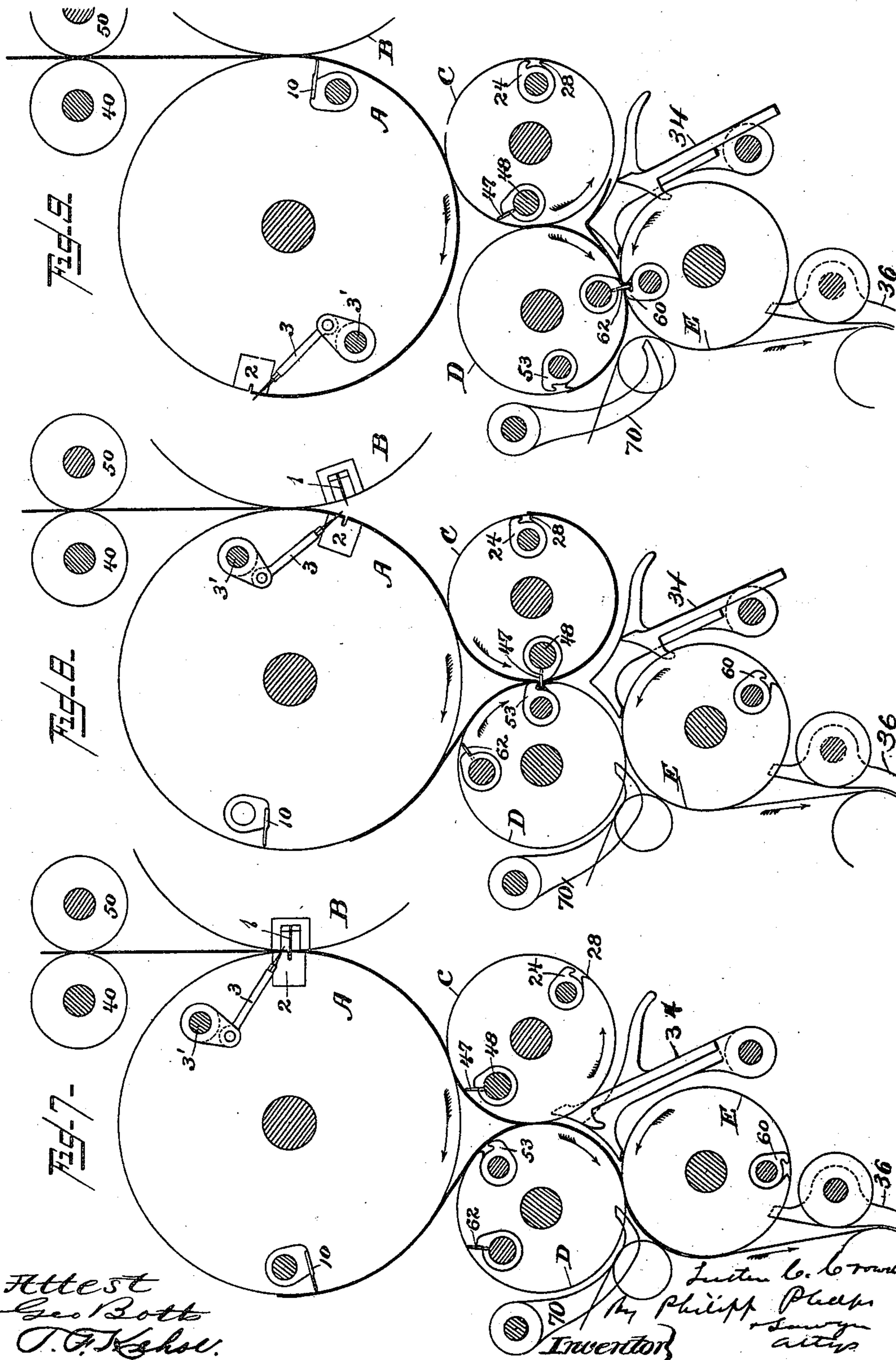
Patented Feb. 12, 1901.

L. C. CROWELL.
PRINTING PRESS.

(Application filed Dec. 31, 1897.)

6 Sheets—Sheet 6.

(No Model.)



UNITED STATES PATENT OFFICE.

LUTHER C. CROWELL, OF NEW YORK, N. Y., ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO ROBERT HOE AND CHARLES W. CARPENTER, OF SAME PLACE.

PRINTING-PRESS.

SPECIFICATION forming part of Letters Patent No. 667,680, dated February 12, 1901.

Application filed December 31, 1897. Serial No. 665,165. (No model.)

To all whom it may concern:

Be it known that I, LUTHER C. CROWELL, a citizen of the United States, residing at New York, (Brooklyn,) county of Kings, State of New York, have invented certain new and useful Improvements in Printing-Presses, fully described and represented in the following specification and the accompanying drawings, forming a part of the same.

My invention relates to deliveries for printing-presses; and it consists of combinations of devices, as hereinafter set forth, whereby variously-folded products may be produced by different adjustments of the press.

The features of the invention will be particularly described in connection with the drawings, and pointed out in the claims.

In the drawings annexed hereto and forming a part of the same, Figure 1 is a front elevation of a press embodying my invention. Fig. 2 is a sectional view, on a larger scale, on the line 2 2 of Fig. 3 looking in the direction of the arrow 2 in said figure. Fig. 3 is an elevation of the front portion of the mechanism, the point of view being indicated by the arrow 3 in Fig. 2. Fig. 4 is a similar view of the rear portion of the same parts shown in Fig. 3. Fig. 5 is a sectional view of some of the parts. Fig. 6 is a section on the line 6 6 of Fig. 5, and Figs. 7 to 9 are diagrammatic views showing the parts in different adjustments.

In general terms this press is designed to give one, two, or three transverse folds to sheets cut and collected or uncollected, as desired, and to give a cross fold or to cut the folded product.

The paper to be folded is delivered to the delivery mechanism which forms the subject of this invention from any suitable printing mechanism. The paper is shown herein as coming over a former F and between external turners 20 30 and nipping-rolls 40 50 of the general construction shown in my Patent No. 331,280. The web then passes between cylindrical carriers A and B, which cooperate to cut the sheets. The carrier B carries a knife 1, which cooperates with a slot in a bed 2 on the carrier A in cutting the sheets. The

leading end of the web is then caught by the pins 3, mounted upon arms projecting from the pin-shaft 3', controlled by the triangular lever 4, pivoted to the carrier and connected by a link 5 to triangular lever 6, also pivoted to the cylinder and having a bowl 7, which engages at the proper times with a cam 8 to withdraw the pins into the carrier and release the paper, these pins being held in their protruded position by the action of spring 9. The withdrawn position of the pins is shown in Fig. 2.

The folding of the sheets is effected by a folding or tucking blade 10, attached to a stud 11 on triangular lever 12, pivoted to the carrier and normally withdrawn into the carrier by the pressure thereon of spring 13, whence in each revolution the blades are protruded by the action of the cam 14 on stud 11, as shown in Fig. 2.

In order to provide for collecting the sheets upon carrier A, the cams 8 and 14 are mounted upon a vertically-sliding frame 15, which moves in guideways 16 16', fixed to the frame. When the sheets are not to be collected, the position of this frame is that shown in Fig. 2. Provision is made for collecting the sheets by mounting the gear-wheel 17 (see Fig. 6) upon a short shaft 18, journaled in the frame, on the inner end of which is an arm 19, carrying a bowl 33, engaging with a slot 21 in the frame 15 and operating when the shaft 18 is turned to cause the frame 14 to reciprocate vertically.

When the press is to be used for uncollected products, the shaft 18 is locked by a pin 22, screw-threaded in the gear-wheel 17 and adapted to be turned so as to enter the frame, as shown in broken lines in Fig. 6, and hold the gear-wheel and the shaft rigidly in position.

When it is desired to use the press for collected products, the pin 22 is screwed out so as not to engage with the frame, and the pinion 23 is keyed upon the outer end of the shaft of carrier A, so as to mesh with the gear-wheel 17. The size of these gears is such that the gear-wheel 17 makes one revolution to two revolutions of the carrier A, though of course this ratio may be varied, if it is de-

sired to collect more than once. It follows that with the parts arranged as in Fig. 6 the frame 15 will be lifted during the alternate revolutions of the carrier A and the cams 8 and 14 thrown out of coöperating position.

The tucking-blade 10 serves to press the paper into the grasp of nipping-jaws 24, mounted upon a rock-shaft 25, on the end of which is an arm 26, pressed by the spring 27 to close the jaws against an abutment 28, and which lever carries on its other end, beyond the shaft 25, a bowl 29, which runs upon a cam made in two parts 31 32, but operating, as the same is shown in Fig. 2, as a single cam. The cam 31 32 holds the jaws 24 open during about three-fourths of the revolution of the carrier C; but during the time while the bowl 29 is passing over the cut-away portion of the cam the jaws 24 are closed down upon their abutment. At the moment, therefore, that the tucking-blade 10 forces out the paper into the grasp of the jaws 24 the latter are in a position to nip them against the abutment 28, and as the carrier C revolves the paper is carried downward between the carriers C and D until the bowl 29 reaches the shoulder of the cam 31 32, and the fold of the paper is released and stripped from the carrier C by the switch 34, the latter being in the position shown in Fig. 7, and thereby diverted between the carriers D and E, is directed by the stripper 70 between the tapes 35 and carrier E, and then directed by the stripper-guide 36 between the tapes 37 37', under the folding-knife 38 and over the folding-rollers 39. The sheets are by this mechanism given a longitudinal fold and pass down to the rotary fly-arms 41.

The folding-blade may be thrown out of operation, in which case the product passes onto the tapes 37 to the rotary fly 42, and in this case, if desired, the knife 43 may be thrown into operation to divide the product. The knife is carried by an arm 43', attached by a set-screw to spring-pressed rock-shaft 71, and is pressed to its operative position by the spring (not shown) of said shaft, or it may be pressed out of operative position against said spring and then locked, if desired. The knife is driven through gears connected with sleeve 73 on the shaft. In Fig. 7 is shown the position of the sheet at the moment when it is severed from the web, the sheet being indicated by the heavy line.

Of course it will be understood that when the press is adjusted for the operation above mentioned the folding mechanisms, hereinafter to be described, upon carriers C, D, and E are locked out of operation.

When it is desired to give the product an additional transverse fold, the portion 31 of the cam 31 32 is withdrawn from the position in which it acts upon the bowl 29 by being lowered in the guideways 44, in which its flange 45 slides. This flange is held in its raised position by the pin 46. (See Fig. 6.)

The switch 34 is also lowered to the posi-

tion shown in Fig. 2. The jaws 24 now keep their grip upon the paper until the bowl 28 reaches the shoulder of cam 32, at which time these jaws will be in the position in which they are shown in Fig. 8. The carrier C is also provided with a tucking-blade 47, mounted upon shaft 48, which has at one end the lever 49, pressed in one direction by a spring, so as to throw the blade 47 out, and pressed in the opposite direction by a bowl 51, running on cam 52. (Shown in dotted lines in Figs. 2 and 5.)

The carrier D is provided with nipping-jaws 53, mounted in substantially the same manner as nipping-jaws 24, above described, and operated by a cam made in two parts 54 55, which parts, however, operate as a single cam when they are in the position shown in Fig. 2, these parts being shown thrown into operation in this adjustment of the press. The paper is first nipped by the jaws 24, as above described, and when the parts come into the position shown in Fig. 8 the paper is again nipped by jaws 53, by which the paper is again folded and carried between carriers D E, whence it takes the same path as before.

When the product is to be given a third transverse fold, the cam-section 55 is pushed out of its operating position, its flange 56 engaging with a guideway 57, (see Fig. 5,) being held in its operative position by the pin 58. The jaws 53 will now maintain their hold upon the paper until the position thereof shown in Fig. 9 is reached.

The carrier E is provided with nipping-jaws 60, which are only brought into operation in this adjustment of the press, their action being similar to that of jaws 53, above described, and these jaws 60 being operated by cam 61, and carrier D is also provided with a tucking-blade 62, which in other adjustments of the press is locked out of operation and which is operated in substantially the same manner as tucking-blade 47, it being withdrawn by the action of cam 63. (Shown in dotted lines in Figs. 2 and 5.) This tucking-blade coöperates with the nipping-jaws 60 to give the product a third fold, the operation of these parts beginning at the position shown in Fig. 9. The product is then carried on by the nipping-jaws 60 in the same path as before, the upper end of guide 36 preventing it from adhering to the carrier E beyond the proper point.

The finger 65 (see Figs. 2 and 5) is merely a guard to hold the bowl of nipping-jaws 53 to its position on cam 54. The plate or spring 66 is a guide for the trailing end of the sheet, and the roller 67 is also for the purpose of preventing the trailing end of the sheet from falling outward.

As before indicated, when the mechanism is adjusted for making one transverse fold the blades 47 and 62 and nipping-jaws 53 and 60 are locked out of action, and when the press is adjusted for making two transverse folds blade 62 and nipping-jaws 60 are locked out

of action. This may be done in any convenient manner, as by drawing back the blade or jaw against its spring and fastening it there by a pin.

5 What I claim is—

1. The combination with a folding mechanism of a sheet-advancing means, a second sheet-advancing means, devices whereby the sheet may be transferred from the first sheet-advancing means to the second, either in a folded or an unfolded condition, a third sheet-advancing means and devices for causing the sheet to be transferred from the second to the third sheet-advancing means, either in a folded or an unfolded condition, substantially as described.

2. The combination of a cylindrical carrier provided with a tucking-blade, a second cylindrical carrier, nipping-jaws arranged thereon to cooperate with the tucking-blade on the first-mentioned carrier to effect a transverse fold, means for causing said nipping-jaws to release the folded paper at either of two points in the revolution of the second carrier, a tucking-blade carried by the second carrier, a third cylindrical carrier, nipping-jaws carried by the third carrier and cooperating with the tucking-blade on the second carrier to give a second fold to the paper when required, substantially as described.

3. The combination of a cylindrical carrier provided with a tucking-blade, a second cylindrical carrier, nipping-jaws arranged thereon to cooperate with the tucking-blade on the first-mentioned carrier to effect a transverse fold, means for causing said nipping-jaws to release the folded paper at either of two points in the revolution of the second carrier, a tucking-blade carried by the second carrier, a third cylindrical carrier, nipping-jaws carried by said last-mentioned carrier and cooperating with the tucking-blade on the second carrier to give a second fold to the paper when required, and means for controlling the travel of the paper so that it shall take the path corresponding to the adjustment of the nipping-jaws carried by the second carrier, substantially as described.

4. The combination of a cylindrical carrier provided with a tucking-blade, a second cylindrical carrier, nipping-jaws arranged thereon to cooperate with the tucking-blade on the first-mentioned carrier to effect a transverse fold, means for causing said nipping-jaws to release the folded paper at either of two points in the revolution of the second carrier, a tucking-blade carried by the second carrier, a third cylindrical carrier, nipping-jaws carried by the third carrier and cooperating with the tucking-blade on the second carrier to give a second fold to the paper, means for causing the nipping-jaws on the third carrier to release the folded paper at either of two points in the revolution of the last-mentioned carrier, a tucking-blade also carried by the third carrier, a fourth cylindrical carrier, nipping-jaws carried by the

fourth carrier and cooperating with the tucking-blade upon the third carrier to give a third fold to the paper when required, substantially as described.

5. The combination with the folding mechanism of a sheet-advancing means, a second sheet-advancing means, devices whereby the sheet may be transferred from the first sheet-advancing means to the second, either in a folded or an unfolded condition, a third sheet-advancing means, devices for causing the sheet to be transferred from the second to the third advancing means, either in a folded or an unfolded condition, a fourth sheet-advancing means provided with folding devices and means whereby said devices may be rendered either operative or inoperative, substantially as described.

6. The combination of a cylindrical carrier provided with a tucking-blade, a second cylindrical carrier, nipping-jaws arranged thereon to cooperate with the tucking-blade on the first-mentioned carrier to effect a transverse fold, a tucking-blade carried by the second carrier, a third cylindrical carrier, nipping-jaws carried by the third carrier and cooperating with the tucking-blade on the second carrier to give a second fold to the paper, means for causing the last-mentioned nipping-jaws to release the folded paper at either of two points in the revolution of the third carrier, a tucking-blade carried by the third carrier, a fourth cylindrical carrier, and nipping-jaws carried by the last-mentioned carrier and cooperating with the tucking-blade on the third carrier to give a third fold to the paper when required, substantially as described.

7. The combination of a cylindrical carrier provided with a tucking-blade, a second cylindrical carrier, nipping-jaws arranged thereon to cooperate with the tucking-blade on the first-mentioned carrier to effect a transverse fold, a tucking-blade carried by the second carrier, a third cylindrical carrier, nipping-jaws carried by the third carrier and cooperating with the tucking-blade on the second carrier to give a second fold to the paper, means for causing the last-mentioned nipping-jaws to release the folded paper at either of two points in the revolution of the third carrier, a tucking-blade carried by the third carrier, a fourth cylindrical carrier, nipping-jaws carried by the last-mentioned carrier and cooperating with the tucking-blade on the third carrier to give a third fold to the paper when required, and means for controlling the travel of the paper so that it shall take the path corresponding to the adjustment of the nipping-jaws carried by the third carrier, substantially as described.

8. The combination of a cylindrical carrier provided with a tucking-blade, a second cylindrical carrier, nipping-jaws arranged thereon to cooperate with the tucking-blade on the first-mentioned carrier to effect a transverse fold, a divided cam and means for withdraw-

ing a portion thereof for causing said nip-
ping-jaws to release the folded paper at either
of two points in the revolution of the second
carrier, a tucking-blade carried by the sec-
5 ond carrier, a third cylindrical carrier, nip-
ping-jaws carried by the third carrier and co-
operating with the tucking-blade on the sec-
ond carrier to give a second fold to the paper
when required, substantially as described.
10 9. The combination of a cylindrical carrier
provided with a tucking-blade, a second cy-
lindrical carrier, nipping-jaws arranged there-
on to coöperate with the tucking-blade on the
first-mentioned carrier to effect a transverse
15 fold, a tucking-blade carried by the second
carrier, a third cylindrical carrier, nipping-
jaws carried by the third carrier and coöper-
ating with the tucking-blade on the second
carrier to give a second fold to the paper, a

divided cam and means for withdrawing a 20
portion thereof for causing the last-men-
tioned nipping-jaws to release the folded pa-
per at either of two points in the revolution
of the third carrier, a tucking-blade carried
by the third carrier, a fourth cylindrical car- 25
rier, nipping-jaws carried by the last-men-
tioned carrier and coöperating with the tuck-
ing-blade on the second carrier to give a third
fold to the paper when required, substantially
as described. 30

In testimony whereof I have hereunto set
my hand in the presence of two subscribing
witnesses.

LUTHER C. CROWELL.

Witnesses:

GUSSIE WHITE,
T. F. KEHOE.