

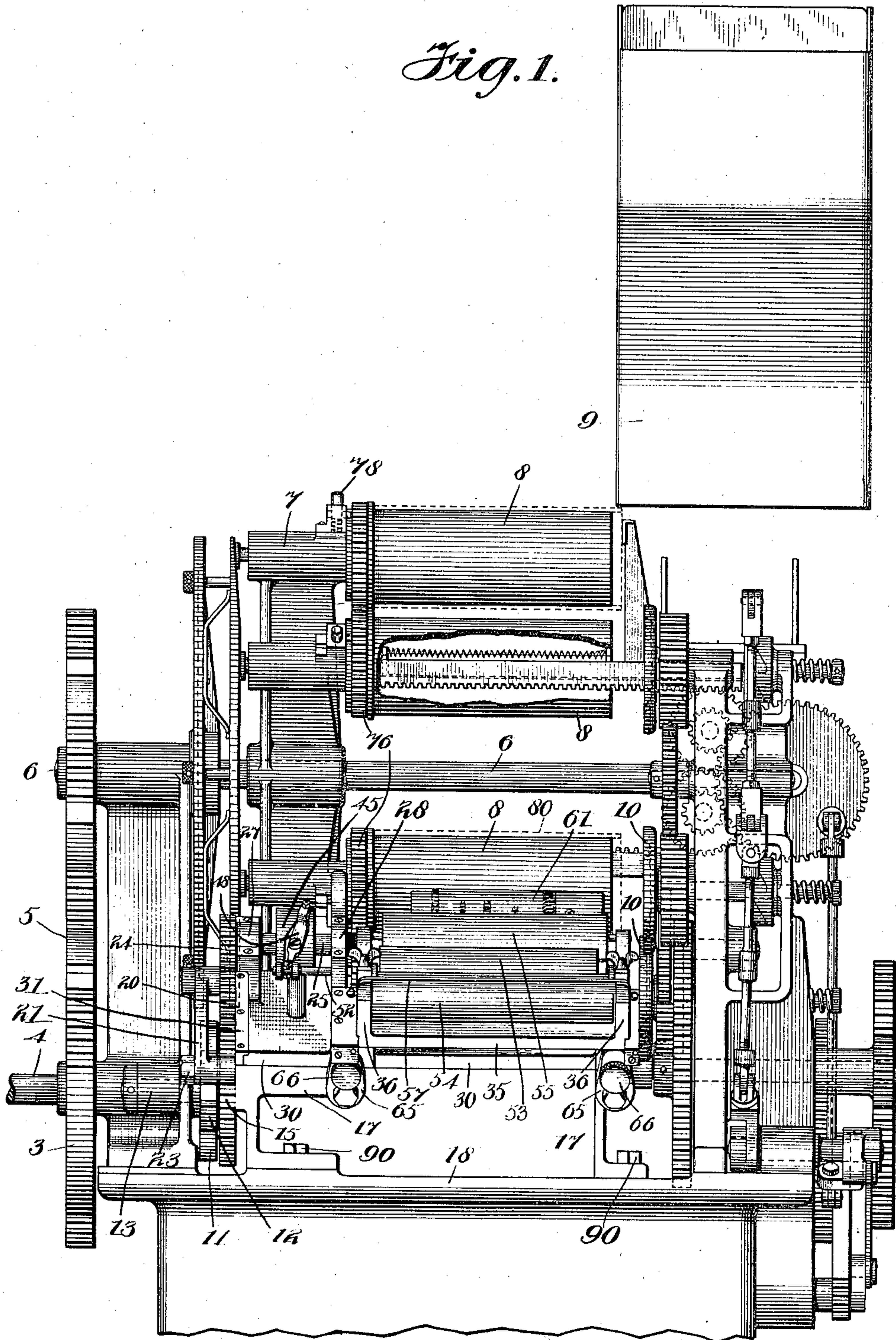
G. W. BEADLE.
 PRINTING ATTACHMENT FOR CARTON CRIMPING MACHINES.
 APPLICATION FILED JULY 22, 1910.

996,827.

Patented July 4, 1911.

5 SHEETS—SHEET 1.

Fig. 1.



WITNESSES
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PRINTING ATTACHMENT FOR CARTON CRIMPING MACHINES.

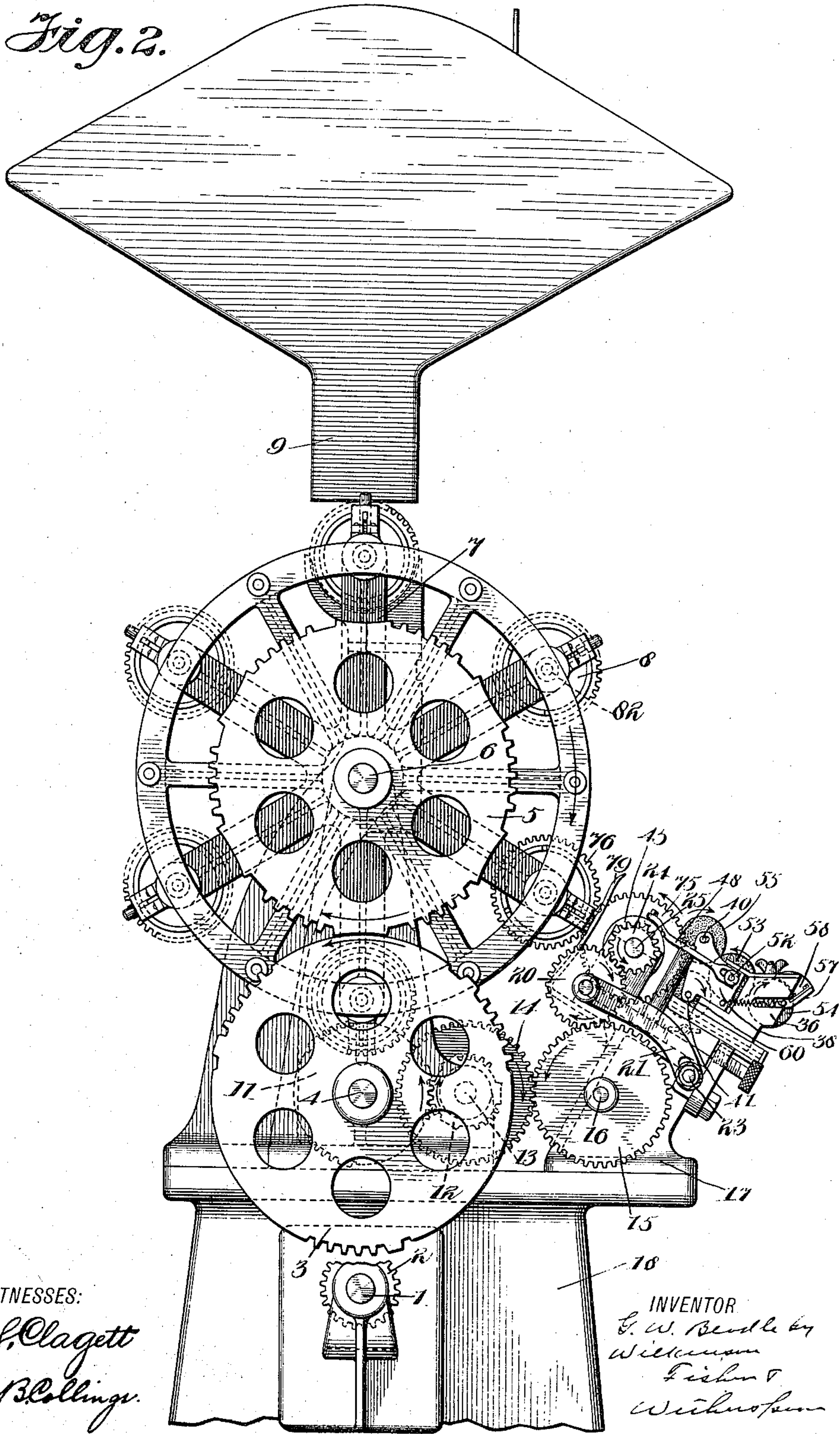
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5 SHEETS—SHEET 2.

Fig. 2.



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5 SHEETS—SHEET 3.

Fig. 3. A detailed technical drawing of a mechanical assembly, likely a watch movement, showing various gears, levers, and components labeled with numbers and letters. The drawing includes a large gear (14) at the bottom left, a smaller gear (16) in the center, and a complex lever system (30, 33, 36, 38, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100) on the right. The drawing is labeled with various numbers and letters, including 14, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, and letters A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z.

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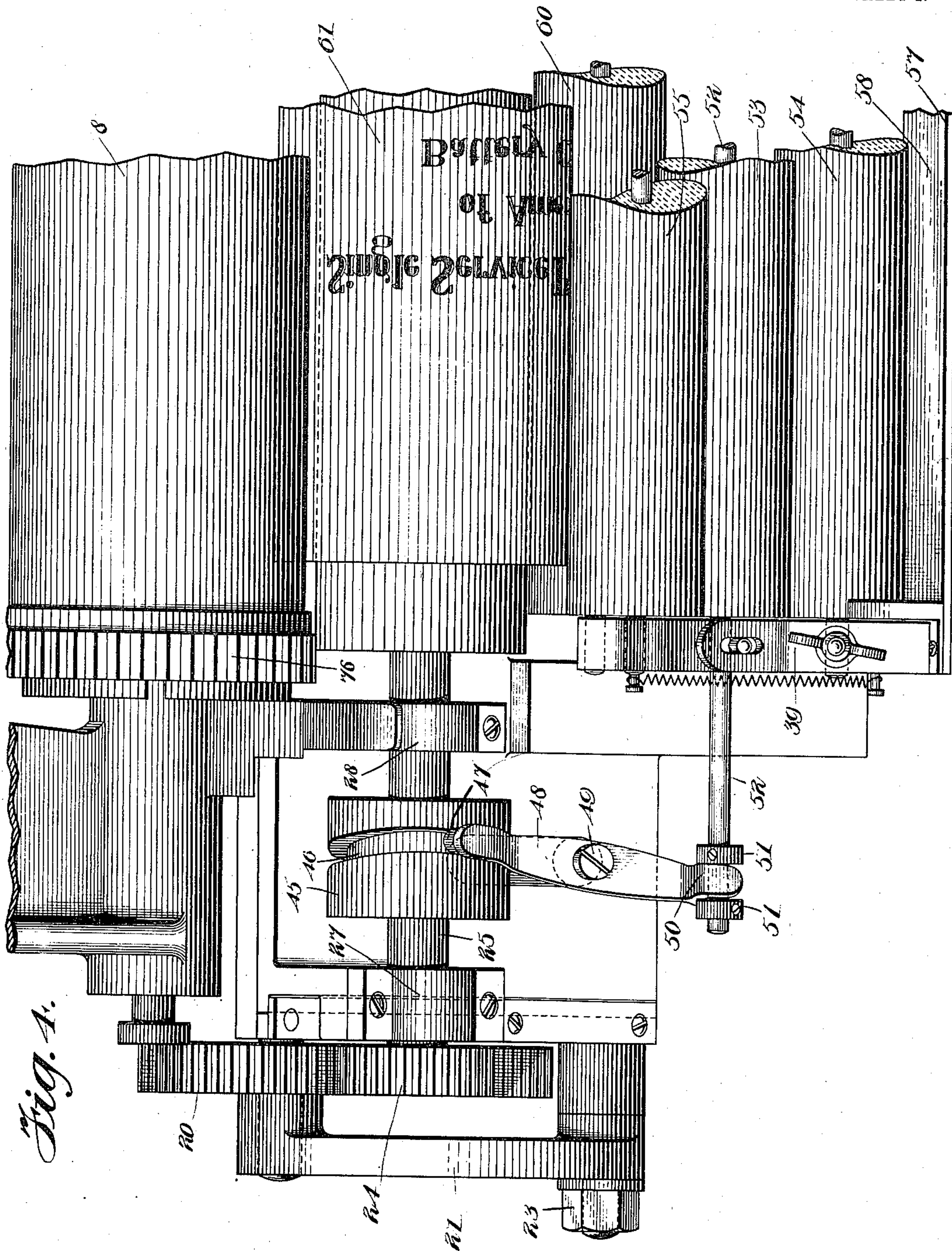
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5 SHEETS—SHEET 4.



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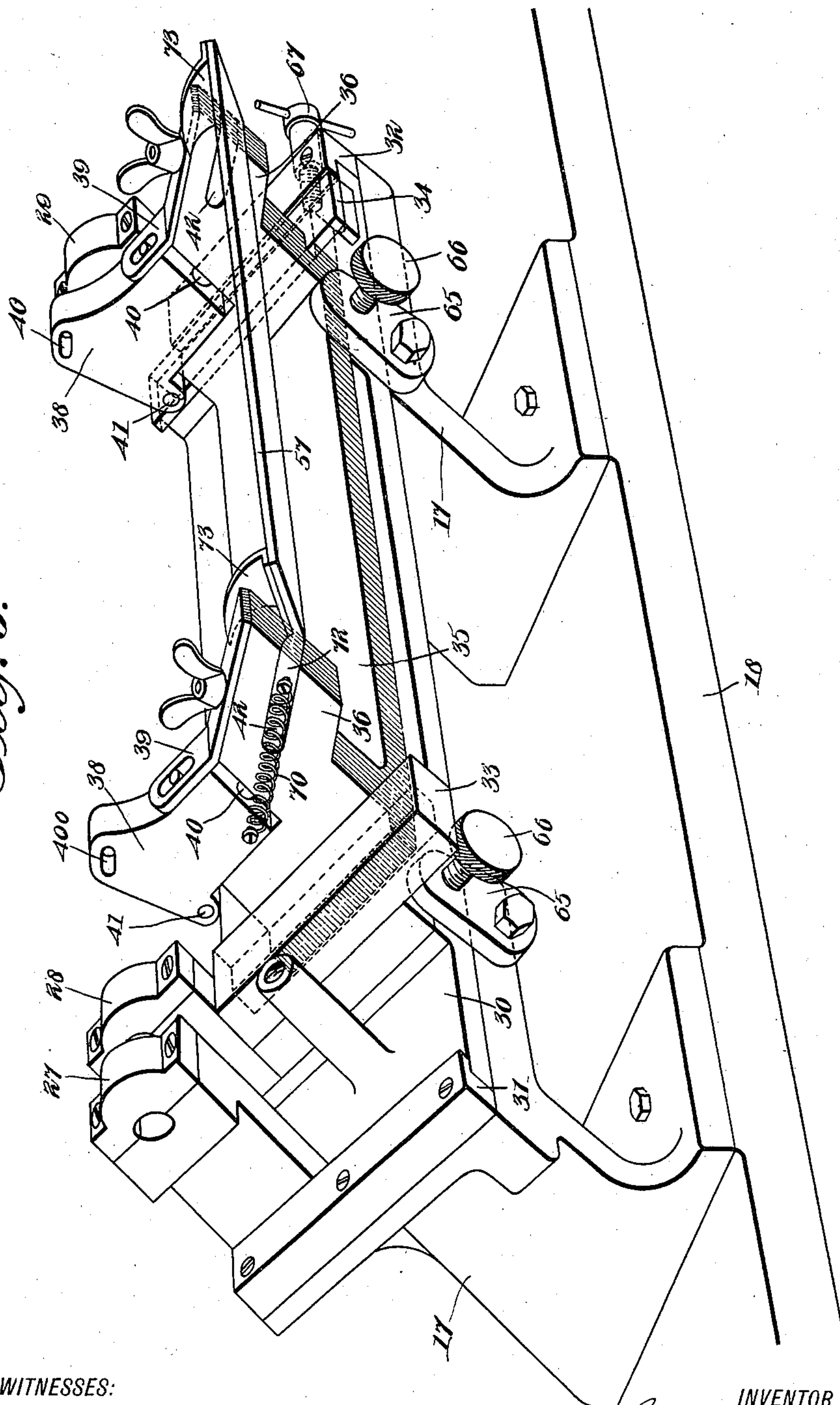
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5 SHEETS—SHEET 5.

Fig. 5.



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UNITED STATES PATENT OFFICE.

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PRINTING ATTACHMENT FOR CARTON-CRIMPING MACHINES.

996,827.

Specification of Letters Patent.

Patented July 4, 1911.

Application filed July 22, 1910. Serial No. 573,312.

To all whom it may concern:

Be it known that I, GEORGE W. BEADLE, a citizen of the United States, residing at Montclair, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Printing Attachments for Carton-Crimping Machines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to printing attachments for carton crimping machines, and has for its object to provide a comparatively inexpensive attachment which will be simple in construction, efficient in action, and one which will be capable of a wide range of usefulness.

To these ends the invention consists in the novel details of construction and combinations of parts more fully hereinafter disclosed and particularly pointed out in the claims.

Referring to the accompanying drawings forming a part of this specification in which like numerals designate like parts in all the views:—Figure 1 is a side elevational view of a carton crimping machine with my invention attached thereto; Fig. 2 is an end elevational view of the parts shown in Fig. 1; Fig. 3 is an end view of the printing mechanism on an enlarged scale; Fig. 4 is a plan view partly broken away, of the parts shown in Fig. 3; and Fig. 5 is a perspective view of the frame supporting the printing mechanism.

1 indicates any suitable source of power which drives the gear 2, meshing with the intermittent gear 3, mounted on the shaft 4. Said gear 3 meshes with the intermittent gear 5 mounted on the shaft 6, carrying the spider 7, on which are mounted the carton carrying mandrels 8, automatically supplied with cartons from the hopper 9, and which cartons automatically have their ends crimped or turned in by the crimping disks 10, all as fully set forth and claimed in my copending United States application Number 564,602, filed June 2, 1910, and entitled crimping machine for cartons. Also mounted on the shaft 4 is the intermittent gear 11, meshing with the intermittent gear 12 on the

shaft 13, carrying the gear 14, meshing with the gear 15, mounted on the stud 16 journaled in one of the frames 17 detachably supported by the main frame 18 of the machine.

The gear 15 meshes with an intermediate floating adjustable gear 20 mounted upon an adjustable curved arm 21, provided with the slot 22 and pivoted on the stud 23, and the gear 20 meshes with the gear 24 mounted on the shaft 25 of the main printing roll 61. This shaft 25 is supported in the three bearings 27, 28 and 29 carried by the sliding frame 30, Fig. 5, supported upon the frames 17 and adapted to move in the ways 31 and 32 carried by said frames 17. The sliding frame or plate 30 also carries the ways 33 and 34, in which slides the frame or plate 35, having the projecting uprights 36, to which are slidably fitted the bearing plates 38 secured to the uprights 36 as by the slotted straps 39 and the pins 40. The plates 38 are provided with bearings 400 and 41 for the inking rollers 55 and 60 respectively, and the uprights 36 are provided with slots 42 for the inking roller 54, all as will appear below.

Mounted on the roller shaft 25, between its bearings 27 and 28 is a cylindrical cam piece 45, Fig. 4, having the cam groove 46, into which fits the roller 47 of the yoke 48 pivoted at 49, and the forked lower end 50 of which fits between the adjustable stops 51, on the reciprocating rod 52. The rod or shaft 52 carries and therefore reciprocates the inking roller 53 past its companion rollers 54, 55 and 60. The roller 54 has disposed a little above and to one side of it a plate 57 providing a space 58 into which the raw ink is placed. The ink it will be clear is carried out of said space 58 by the roller 54 and to the roller 53, which in turn carries it to the rollers 55 and 60 while spreading the same evenly and smoothly on said last mentioned rollers during its reciprocations. The rollers 55 and 60 are in rolling contact with the printing roller 61 carried by the shaft 25, and since their own ink is uniformly and smoothly spread over their surfaces they ink the roller 61 in the most satisfactory manner.

To the frames 17 are rigidly secured the lugs 65 through which pass the adjusting screws 66, which take against and are adapt-

ed to move the plate 30 and with it all the above mentioned rollers and bearings, so as to bring the parts into that position best adapted for printing on the outer surfaces of the cartons as they pass the roller 61. After said parts are properly adjusted, they are then locked by the set screw 67 which takes against the plate 30 as shown in Fig. 5.

The plate 57 is provided with bent projections 72 as shown, which extend into the slots 42 on the uprights 36 and bear against the pivots 71 of the roller 54. Said projections are also yieldingly connected to the bearing pieces 38 by the springs 70, so that a yielding mounting for the inking rollers is provided. In order to prevent the ink from escaping from the space 58, end pieces 73 are attached to said plate 57 and are curved to fit the roller 54 as indicated.

Mounted on the shaft 25 near the bearing 28 (and omitted for the sake of clearness in Figs. 1 and 4) is the gear 75, Fig. 3, with which the gears 76 on the mandrels 8 intermesh. As the mandrels revolve around the shaft 6 of the spider 7, they are successively brought opposite the crimping disks 10 and said disks are forced against the ends of the cartons 80 carried by said mandrels, whereupon their ends are turned in or crimped, all as is clearly disclosed in my copending application above. In order to successfully carry out this crimping operation, it is essential that the cartons be held firmly on the mandrels, so that there is no slip between said cartons and said mandrels. To this end the mandrels are made expanding, and they not only firmly hold the cartons on their outer surfaces, but the said mandrels are held from turning by means of the spring controlled pins 78 carrying lugs 83 which engage slots 81 in the periphery of the gears 76, as best shown in Fig. 3. When, however, the crimping operation has been completed and a carton 80 is to engage the printing roller 61, it is desirable to permit the mandrels to turn on their axes 82 in order that a rolling contact may be provided between the printing roller and said carton. To this end a lever-like cam 79 is carried by the framework, and is located in the paths of the pins 78, so that just before the mandrels come into their printing positions, the said cam 79 forces the lugs 83 out of the slots 81, and thereby permits the gear 75 to rotate the gear 76 and with it the carton carried by the mandrel, thereby causing the matter carried by the printing roll 61 to be imprinted upon the said carton.

As is clearly set forth in my application above, the cartons are carried around until they reach a point where they are discharged, so that it is necessary to bring the printing roller 61 back to its normal position before the next carton comes into its

printing position. In order to accomplish this the intermittent gears are so timed that the roller 61 is rotated in the same direction as that in which it moved when impressing its imprint upon the carton just after each carton passes said roller, and this movement is completed before the next carton arrives. The arrows in Fig. 2 indicate the direction in which the intermittent gears drive the printing roller and the arrow between the mandrels also indicates the direction in which the mandrels move, so it is clear that the movement of the printing roller 61 by the intermittent gears must be completed before the next printing operation.

The frames 17 are detachably attached to the main frame 18 of the machine, as by the fastenings 90, so that the whole printing attachment may be readily applied to or removed from the crimping machine proper. In fact since the gears 14 and 15 and the gears 76 and 75 readily engage and disengage, there is no difficulty at all in applying the printing mechanism to a regular carton crimping machine, or in taking the same off when it is not needed, for cleaning purposes, or at any other time.

The operation of the invention will be clear from the foregoing, but may be summarized as follows: Power being applied through the main driving shaft 1, the gears 3 and 5 are intermittently rotated, whereupon the mandrels 8 carrying the cartons 80 are intermittently brought into position opposite the crimping disks 10, in which position the crimping operation takes place by the means disclosed in my application above, and immediately after this crimping operation, the mandrels are unlocked so as to permit the same to rotate upon their axes 82, and the printing roller 61 thereupon prints upon the outer surfaces of the cartons any suitable legend, the carton being revolved through the engagement of the gears 75 and 76. The intermittent gear 3 also drives intermittently through the train of gears 11—14—15—20 and 24 the printing roller 61, and the parts are so timed that the printing roller 61 is brought back to its normal position after each printing operation.

In order that the parts may be accurately adjusted so as to get the best effects, the bearings for the rollers are mounted on a sliding plate 30, which is adjustably locked in its printing position by means of the screws 66 and 67. In order that the inking rollers may have a yielding mount, the parts carrying said rollers are slidingly mounted over the plate 30 and the bearings of said rollers are also slidingly and yieldingly mounted, as shown.

In order that ink may be evenly and uniformly spread over the inking roller, the

said ink is fed from the reservoir 58 by means of the roller 54 onto a slidingly reciprocating roller 53 which contacts with a pair of inking rollers 55 and 60. The roller 53 is reciprocated by means of the cam 46 and lever 48.

The whole printing attachment is made compact and small in size, while its parts are all readily demountable for cleaning.

It is evident that those skilled in the art may vary the details of construction and the arrangement of parts without departing from the spirit of my invention. I do not therefore wish to be limited to such features except as may be required by the claims.

What I claim is:—

1. In a machine for printing on cartons, the combination of a printing roller; mandrels adapted to present said cartons to said roller; means for holding said mandrels locked against rotation on their own axis; means for unlocking said mandrels prior to the printing operation; a roller adapted to supply ink to said printing roller; a reciprocating roller adapted to evenly spread ink on said inking roller; and a yielding mount for said inking roller; substantially as described.

2. In a machine for printing on cartons, the combination of a printing roller; mandrels adapted to present said cartons to said roller; means for holding said mandrels locked against rotation on their own axis; means for unlocking said mandrels prior to the printing operation; a roller adapted to supply ink to said printing roller; a reciprocating roller adapted to evenly spread ink on said inking roller; a yielding mount for said inking roller; and a sliding frame carrying all of said rollers, substantially as described.

3. In a machine for printing on cartons, the combination of a printing roller provided with a shaft; mandrels adapted to present said cartons to said roller; a roller adapted to supply ink to said printing roller; a reciprocating roller adapted to evenly spread ink on said inking roller; a yielding mount for said inking roller; a gear carried by each of said mandrels; a gear carried by the shaft of said printing roller adapted to successively engage said mandrel gears; and a sliding frame carrying said last mentioned gear and said rollers, substantially as described.

4. In a machine for printing on cartons, the combination of a plurality of carton carrying mandrels; means for intermittently revolving said mandrels around an axis; a printing roller adapted at intervals to contact with the cartons carried by said mandrels; connections with said means for intermittently revolving said printing roller; a roller adapted to supply ink to said printing roller and a roller adapted to reciprocate

in contact with said inking roller to uniformly spread the ink thereover, substantially as described.

5. In a machine for printing on cartons, the combination of a plurality of carton carrying mandrels; means for intermittently revolving said mandrels around an axis; a printing roller adapted at intervals to contact with the cartons carried by said mandrels; connections with said means for intermittently revolving said printing roller; a roller adapted to supply ink to said printing roller; a roller adapted to reciprocate in contact with said inking roller to uniformly spread the ink thereover; a roller adapted to supply ink to said reciprocating roller; a yielding mount for said last mentioned roller; and a sliding frame carrying all of said rollers, substantially as described.

6. In a machine for printing on cartons, the combination of a plurality of carton carrying mandrels; a spider on which said mandrels are mounted; means for intermittently revolving said mandrels around an axis; a printing roller adapted at intervals to contact with the cartons carried by said mandrels; gear connections between each of said mandrels and said printing roller; connections with said intermittent means for intermittently revolving said printing roller; a roller adapted to supply ink to said printing roller; a roller adapted to reciprocate in contact with said inking roller to uniformly spread the ink thereover; and a slidingly adjustable frame carrying said rollers, substantially as described.

7. In a machine for printing on cartons the combination of a plurality of carton carrying mandrels; intermittent gearing for revolving said mandrels around an axis; a printing roller adapted to contact with said cartons; gears between said mandrels and said printing roller; and intermittent gears for revolving said printing roller at intervals, substantially as described.

8. In a machine for printing on cartons, the combination of a plurality of carton carrying mandrels; intermittent gearing for revolving said mandrels around an axis; a printing roller adapted to contact with said cartons; gears between said mandrels and said printing roller adapted at intervals to rotate said mandrels in one direction; intermittent gears for revolving said printing roller at intervals in an opposite direction; an inking roller for said printing roller; and an adjustable frame carrying said rollers, substantially as described.

9. In a machine for printing on cartons, the combination of a plurality of carton carrying mandrels; intermittent gearing for revolving said mandrels around an axis; means to lock said mandrels against turning on their own axes; a printing roller adapted to contact with said cartons; gears between

said mandrels and said printing roller; means to unlock said mandrels to permit the same to turn on their own axes just before contacting with said printing roller; and
5 intermittent gears for revolving said printing roller at intervals, substantially as described.

10 In a carton crimping and printing machine having carton carrying mandrels, the combination of intermittent means for revolving the mandrels around an axis; means for preventing said mandrels from rotating around their own axes; a printing roller adapted to successively contact with
15 said cartons; automatic means for unlocking said mandrels and permitting the same to rotate just before said contacts take place; and means to slidably adjust said printing roller, substantially as described.

20 11. In a carton crimping and printing machine having carton carrying mandrels, the combination of intermittent means for revolving the mandrels around an axis; means for preventing said mandrels from rotating around their own axes; a printing roller adapted to successively contact with said cartons; automatic means for unlock-
25 ing said mandrels and permitting the same to rotate just before said contacts take place; means to slidably adjust said printing roller; intermittent gears for rotating said printing roller; an inking reservoir; a roller for taking ink out of the same; a reciprocating roller for receiving said ink; and an
30 inking roller adapted to receive ink from said reciprocating roller and to deliver it to said printing roller, substantially as described.

40 12. In a carton crimping and printing machine, the combination of supports adapted to be attached to the main frame of the machine and provided with slide ways; a frame fitting said slide ways; a printing roller having a shaft carried by said frame,
45 slide ways carried by said frame; a second frame fitting said last mentioned slide ways; and yielding bearings carried by said second frame, a gear carried by the shaft of said printing roller and a plurality of carton
50 carrying mandrels having gears adapted to successively engage said first mentioned gear, substantially as described.

13. In a carton crimping and printing machine, the combination of supports adapt-

ed to be attached to the main frame of the 55 machine and provided with slide ways; gearing carried by said supports; a frame fitting said slide ways; a printing roller having a shaft carried by said frame and adapted to be operated by said gearing; slide ways car- 60 ried by said frame; a second frame fitting said last mentioned slide ways; yielding bearings carried by said second frame; and ink rollers mounted in said bearings, a gear carried by the shaft of said printing roller, 65 and a plurality of carton carrying mandrels having gears adapted to successively engage said first mentioned gear, substantially as described.

14. In a carton crimping and printing 70 machine, the combination of a plurality of carton carrying mandrels; means adapted to lock said mandrels against rotation on their own axes prior to being subjected to the crimping operation; means to unlock 75 said mandrels after the crimping operation; and means to successively print on the outer surfaces of said cartons immediately after said mandrels are released, substantially as described. 80

15. In a carton crimping and printing machine, the combination of a plurality of carton carrying mandrels; means adapted to lock said mandrels against rotation on their own axes prior to being subjected to the 85 crimping operation; means to unlock said mandrels after the crimping operation; means to successively print on the outer surfaces of said cartons immediately after said mandrels are released; means to intermit- 90 tently operate said printing means; and an adjustable slide supporting the same, substantially as described.

16. In a carton crimping and printing machine, the combination of means comprising 95 mandrels for crimping the ends of the cartons; means for printing on the outer surfaces of the cartons after said ends have been crimped; intermittent gears for driv- 100 ing both of said means; and gears for rotating the mandrel from the printing means, substantially as described.

In testimony whereof, I affix my signature, in presence of two witnesses.

GEORGE W. BEADLE.

Witnesses:

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H. S. RODGERS.