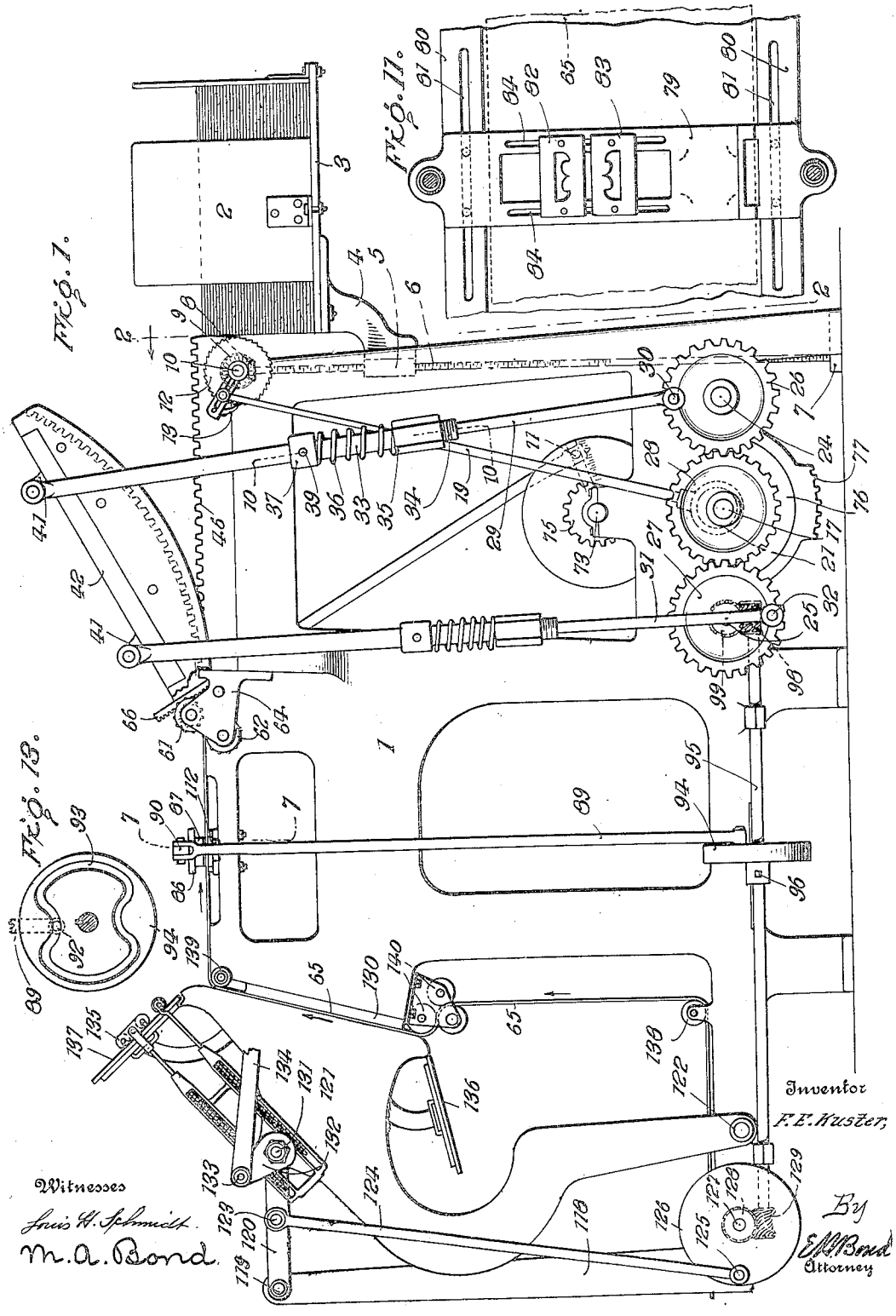
No. 887,820. PATENTED MAY 19, 1908.

F. E. KUSTER.

PAPER BOX MACHINE.

APPLICATION FILED JULY 23, 1907. 4 SHEETS—SHEET 1.



Witnesses
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FIG. 2.

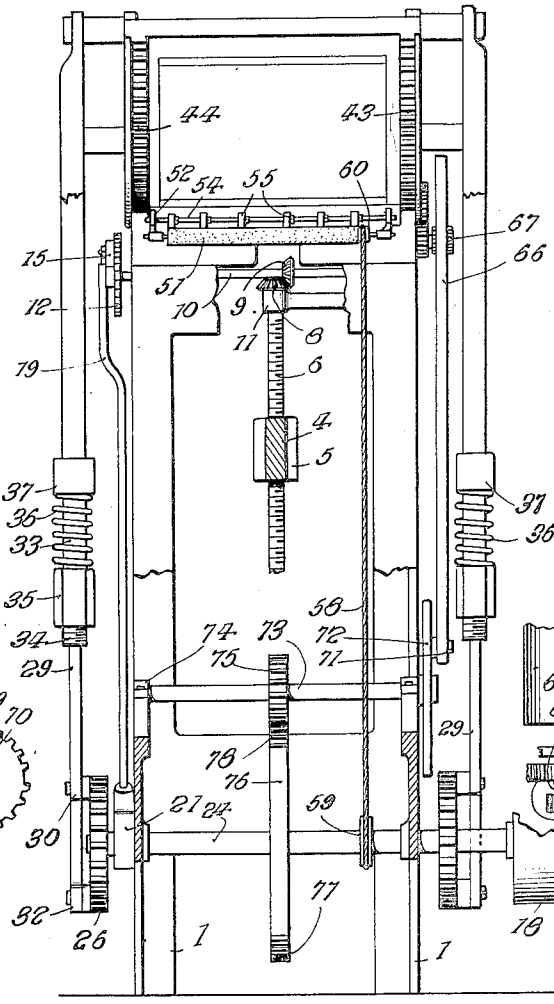


FIG. 14.

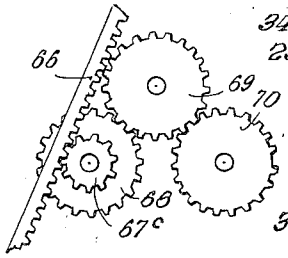


FIG. 15.

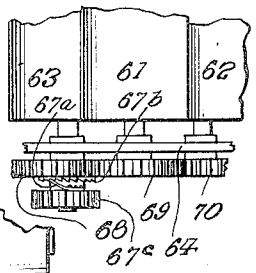
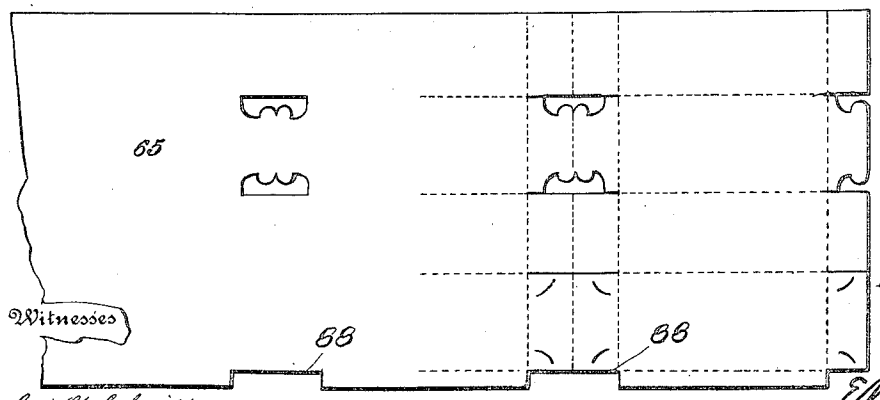


FIG. 12.



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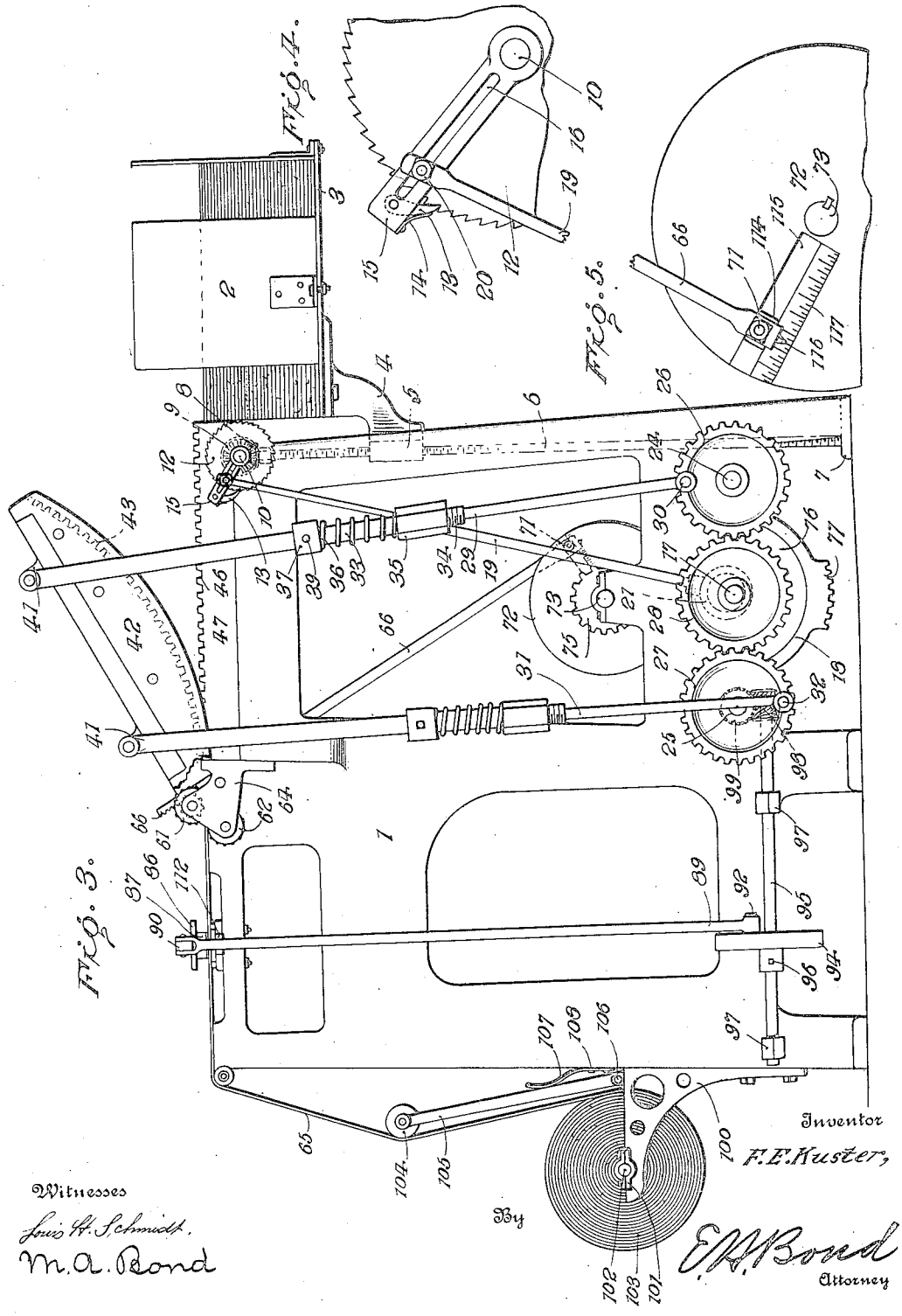
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PAPER BOX MACHINE.

APPLICATION FILED JULY 23, 1907. 4 SHEETS—SHEET 3.



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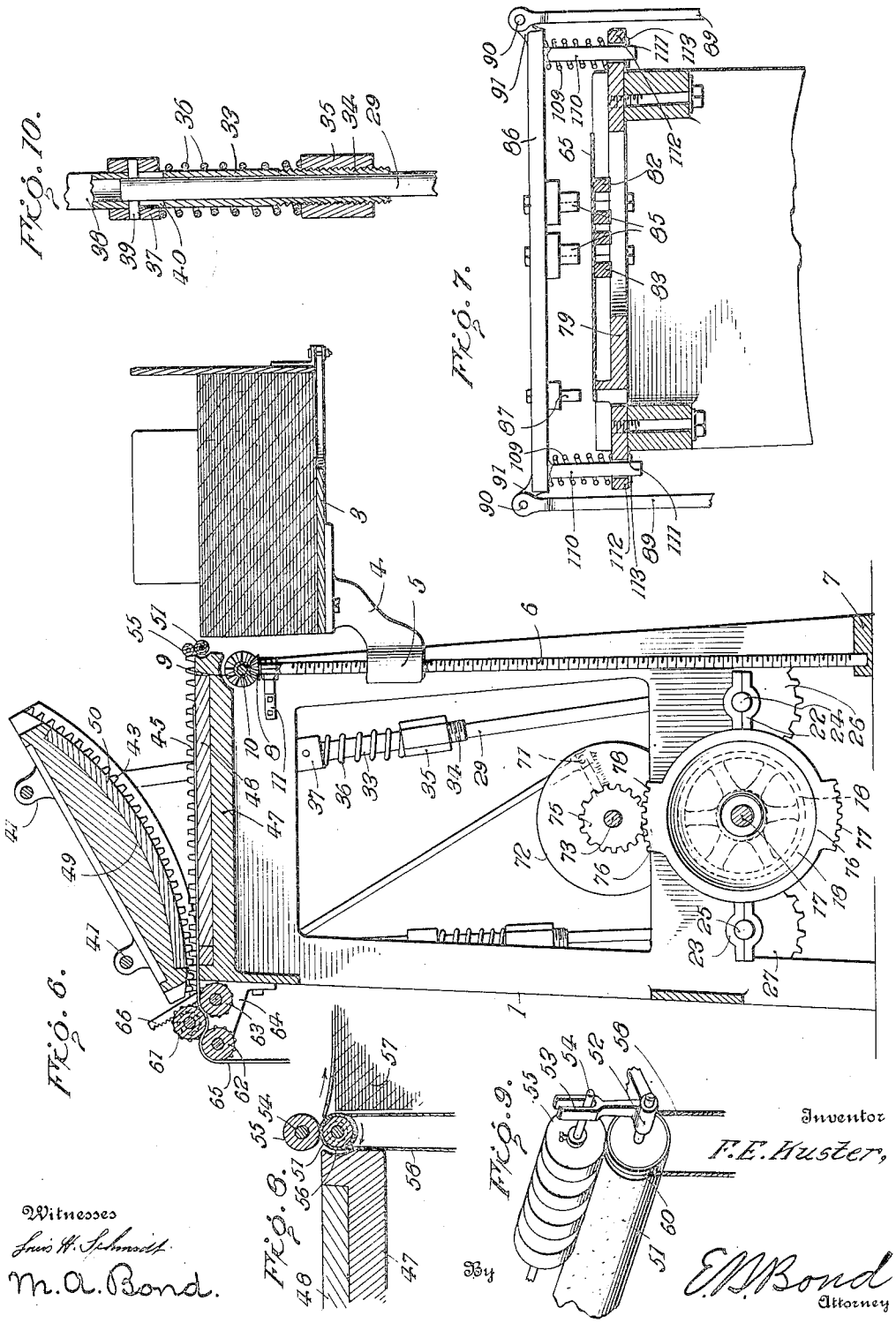
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APPLICATION FILED JULY 23, 1907.

4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

FREDERICK E. KUSTER, OF CEDARTOWN, GEORGIA.

PAPER-BOX MACHINE.

No. 887,820. Specification of Letters Patent. Patented May 19, 1908.

Application filed July 23, 1907. Serial No. 385,117.

To all whom it may concern:

Be it known that I, FREDERICK E. KUSTER, a citizen of the United States of America, and resident of Cedartown, in the county of Polk and State of Georgia, have invented certain new and useful Improvements in Paper-Box Machines, of which the following is a specification.

This invention relates to certain new and useful improvements in machinery for the scoring or creasing and cutting of blanks for boxes, of paper, strawboard or any other analogous material, and it has for its objects among others to provide an improved machine for this purpose which shall be capable of performing more satisfactory work and turning out a greater number of blanks while effecting a saving of material.

I provide, in cases where the blanks are to be printed with addresses, designs or advertisements, a printing mechanism therefor which is designed to operate in conjunction with the other elements of the machine, being supported upon the same frame or bed and cooperatively arranged, the parts all being so timed in their movements as to insure a proper succession of steps whereby the paper fed to the machine will be printed, punched and then creased and cut, the creased and cut blanks being delivered to a suitable receptacle which is so mounted and operatively connected as to be automatically fed downward as the pile of blanks increases.

Provision is made for the proper and perfect registration of the printing forms with the punching dies and scoring or creasing and cutting mechanism so that the entire operations may be performed in the one machine.

I aim further at improvements in the details of construction whereby the machine as a whole is better adapted to perform the functions for which it is designed and to render the machine more perfect and complete as a whole.

Other objects and advantages of the invention will hereinafter appear and the novel features thereof will be particularly pointed out in the appended claims.

The invention in its preferred form is clearly illustrated in the accompanying drawings which, with the numerals of reference marked thereon, form a part of this specification, and in which

Figure 1 is a side elevation of my improved machine with parts broken away. Fig. 2 is an end view looking in the direction of the arrows in Fig. 1 with parts in section, portions broken away and parts removed. Fig. 3 is a side elevation of the device or machine with the printing mechanism omitted. Fig. 4 is an enlarged detail in elevation of the adjustable connection with the hopper feeding mechanism. Fig. 5 is an enlarged detail in elevation of the adjustable connection for the paper-feed rack bar. Fig. 6 is a substantially central vertical longitudinal section through the creasing and scoring mechanism and the hopper or receptacle for the completed blanks. Fig. 7 is an enlarged vertical transverse section on the line 7—7 of Fig. 1. Fig. 8 is an enlarged sectional detail of the feeding device intermediate the scoring and cutting mechanism and the blank receptacle. Fig. 9 is a perspective detail of such feeding mechanism. Fig. 10 is a longitudinal section on the line 10—10 of Fig. 1. Fig. 11 is a detail in top plan of the lower member of the die. Fig. 12 is an enlarged view of a portion of the paper illustrating the form of blank and the manner of cutting the same. Fig. 13 is a detail of the cam and its connection for operating the punch. Fig. 14 is a detail in elevation, on an enlarged scale of a modified form of the blank feeding mechanism. Fig. 15 is a detail plan of a portion of the same.

Like numerals of reference indicate like parts throughout the several views.

While I have shown in the accompanying drawings what I at the present time consider the preferable form of mechanism for carrying out my invention, it is evident that although such embodiment of the invention may be found to be the most expedient and satisfactory the same is subject to changes, variations and modifications in the proportion of parts and in the instrumentalities employed without departing from the spirit of the invention or sacrificing any of its advantages. I therefore do not intend to restrict myself to the exact details of construction, size or relative arrangement of parts or the instrumentalities employed, but reserve the right to make such changes, variations, and modifications as come properly within the scope of the protection prayed. For instance, the form of frame may be varied, any other style of printing mechanism than that herein illustrated may be employed, the paper may be fed to the machine by any preferred or well-known means, and while the various connections for actuating the

punches, the creasing and cutting devices, the feed mechanism and other parts as herein shown is believed to be efficient and possibly preferable to any other, such parts may be replaced by others of dissimilar nature provided they perform the same functions or bring about like results in an analogous manner.

Referring to the drawings 1 designates the frame of the machine which is of sufficient weight and solidity to sustain the operating parts. Upon this frame or bed are mounted and supported all of the instrumentalities which constitute the complete machine, whether such machine include a printing mechanism by which the material of which the blanks are formed is printed as the same is passed to the punches, or such printing mechanism be omitted and the printing performed on a separate machine as may sometimes be desired. Both forms of machine are herein illustrated.

At the rear end of the machine I have shown a box or receptacle for the reception of the blanks as they are delivered from the creasing and cutting mechanism. This may be sometimes omitted and the completed blanks disposed of in any suitable manner without affecting the other elements of the device, although the presence of such receptacle is desirable, and in this instance I have chosen to mount it as follows;—The receptacle 2 may be of any suitable nature the sides of which are supported upon the base 3 which in turn is supported upon or secured to the standard or bracket 4 of sufficient strength to support the same, the said bracket being formed with a nut 5 which is adapted to receive the screw threaded rod 6 which is mounted at its lower end in a suitable step 7 at the base of the frame and at its upper end carries a bevel pinion 8 meshing with the bevel pinion 9 on the transverse shaft 10. The rod 6 is mounted in a suitable bearing 11 near its upper end and the shaft 10 carries a toothed wheel 12 with which engages a tooth or pawl 13 pressed to its work by a suitable spring 14 mounted on an arm 15 extending radially from the shaft 10 as seen clearly in Figs. 1 and 4, the said pawl being pivotally mounted upon the said arm near its outer end beyond the periphery of said wheel. This arm is provided with a longitudinal slot 16 as seen best in Fig. 4 for a purpose which will soon be made apparent.

17 is the driving or power shaft mounted in suitable bearings within the frame and designed to be revolved in any suitable manner, as for instance by a belt (not shown) engaging the drive pulley 18 on one end of the shaft as indicated by dotted lines in Fig. 6.

19 is a rod having one end adjustably connected with the arm 15, in this instance by means of a pin 20 adjustable in the slots 16 of said arm as seen best in Fig. 4, so that the connection of said rod with said arm may be adjusted to vary the movement of the arm and consequently the throw of the pawl 13 to cause it to move the wheel 12 a greater or less distance so as to lower the nut 5 and its bracket 4 and the blank receptacle 2 a greater or less distance according to the thickness of the paper being passed through the machine. The lower end of this rod 19 is actuated from the power shaft 17 in any suitable manner, in this instance by an eccentric 21 as seen clearly in Figs. 1 and 2, the construction being such that the pawl is actuated to move the wheel 12 and consequently the receptacle 2 the distance of the thickness of a sheet of paper each time a blank is fed from the machine to such receptacle.

Mounted in suitable bearings or boxes 22 and 23 in the frame 1 near the base thereof are the shafts 24 and 25. On the shaft 24 is a gear 26 while on the shaft 25 is a gear 27. These gears mesh with the gear 28 on the shaft 17 which is in horizontal alinement with and intermediate of the shafts 24 and 25 as seen clearly in Figs. 1 and 6. The gears 26 and 27 thus revolve in opposite directions for a purpose which will soon be made apparent. 29 is a rod connected at its lower end with a wrist pin 30 on the gear wheel 26, while 31 is a similar rod connected at its lower end to the wrist pin 32 on the gear wheel 27, it being clearly seen from Fig. 1 that the points of connection of these two rods with the gear wheels are at diametrically opposite points so that the said rods will be moved simultaneously on opposite directions, that is while one is moving upward the other will be moving downward.

While not absolutely necessary it is in many instances advisable to have these rods 29 and 31 so constructed as to be capable of yielding slightly in case of emergency, as for instance when unusually thick paper is being operated upon, so as to avoid any possibility of injury to the parts. For this purpose each rod is constructed substantially as follows;—Upon the lower portion of the rod, it being constructed in sections, is the sleeve 33 the lower end of which is screw threaded as shown at 34 in Fig. 10 to receive the nut 35 which is adjustable thereon and against which bears one end of a spring 36, the opposite end of which bears against the collar 37 which is sleeved upon the upper portion 38 of the sleeve 33, being connected to the upper end of the rod 29 by a transverse pin 39 which passes through the said rod and through the collar 37, which pin has movement in a longitudinal slot 40 in the sleeve 33, all as clearly illustrated in Fig. 10. From this it will be seen that while the rod is normally rigid yet the connection above described permits of sufficient longitudinal yield or relative endwise movement of the parts to compensate.

for any sudden jar or shock, resulting from any cause, and which might otherwise tend to injure the parts. It is to be understood that there are two of these rods at each side of the machine one of those upon each side being clearly seen in Fig. 2, while Fig. 6 illustrates both of such rods upon one side and Fig. 1 clearly shows both of such rods upon the other side. It will be understood that the companion rods, that is the two rods 29, or the two rods 31, are arranged to move in unison that is both move upward or downward together as will be clearly understood from Fig. 2. As these rods are all substantially alike the above description of one, the yielding connection in which is clearly illustrated in Fig. 10, will suffice for all and hence a further detailed description of the other rods will not be necessary.

The rods 29 and 31 have pivotal connection at their upper ends with ears or lugs 41 upon opposite sides of the rocker 42, as shown clearly in Fig. 1, which rocker is thus given its forward and back movements as will be readily understood. This rocker is provided upon its opposite sides with registering teeth or curved racks 43 and 44 which engage with the racks or teeth 45 and 46 on the opposite sides of the table or the like 47 upon which is supported the scoring or creasing form 48 which may be of any of the well known forms, it being understood that the form is adjustable to adapt it for different sized blanks, a detailed showing of which is not considered necessary.

The rocker 42 is recessed upon its under side as shown at 49 to receive the curved plate 50 operating in conjunction with the scoring or creasing form to score or crease the paper and to sever the same. This rocker is designed to perform its function twice during each revolution of the power shaft, once as it moves in the one direction and again as it moves in the opposite direction. The racks or teeth 43 and 44 and 45 and 46 serve to keep the parts in alinement and make them register, and in order that the rocker may be lifted, as it were, at each end of its stroke so as to not interfere with the feed of the blank the teeth or racks are continued at each end as seen in Figs. 1, 3 and 6, and the parts so timed in their movements that the rocker first performs its duty and its rocking movement is then continued till its teeth engaging the racks on the sides of the table serve to lift the rocker and take it out of contact with the paper which is then free to be fed forward, the return movement of the rocker then takes place and when it reaches the end of its movement in the other direction it is again carried beyond the end of the creasing or scoring form so that the paper will not be retarded in its forward feeding.

The blank receptacle 2 is preferably adjustable as to size to adapt it for different sized blanks, this being accomplished in any suitable or well known manner.

At the rear end of the table 47 I arrange a feed device for the blanks. This may be of any suitable character, one efficient form being herein illustrated, particular attention being directed to Figs. 2, 8 and 9, wherein there is shown a roller 51 preferably having a covering of felt or the like, this roller being interposed between the rear end of the table and the blank receptacle as seen clearly in Fig. 8 its shaft being suitably mounted in bearings 52, from which rise the bifurcated arms 53 in which are mounted the ends of the shaft 54 carrying the idlers 55 which are adjustable on the said shaft as shown in Fig. 9. A transverse recess 56 may be formed in the end of the table as seen in Fig. 8 if necessary to accommodate the feed roller. The blanks 57 are fed between this roller and the idlers as will be readily understood from Fig. 8. Motion may be imparted to the roller 51 in any suitable manner, such for instance as by a cord or the like 58 passed over the pulley 59 on the shaft 17 and over the pulley 60 on the shaft of the said roller as will be readily understood from Figs. 2 and 9. This feed device is provided to insure the feeding of the blanks after they have been acted upon by the scoring and cutting device.

At the front or opposite end of the table 47 is arranged another feed mechanism which is constructed as follows;—61, 62 and 63 are feed rollers arranged as seen clearly in Fig. 6, the shafts thereof being suitably mounted in bearings in brackets 64 attached to the end of the table or frame as seen in said Fig. 6 and between the said rollers passes the paper 65. These rollers are given intermittent motion by means of the rack 66 as seen in Figs. 1, 3 and 6 and in detail in Fig. 14. This rack engages a pinion 67 on the shaft of one of the rollers, said pinion being shown on the shaft of the uppermost roller in Figs. 1, 3 and 6 and upon the shaft of one of the other rollers in Figs. 14 and 15, said pinion in Figs. 14 and 15 being numbered 67°, the said rollers being geared together by the intermeshing gears 68, 69, and 70 as seen best in Fig. 14. This rack is connected at its lower end to a crank pin 71 on the disk 72 on the shaft 73 as seen clearly in Figs. 2 and 3. This shaft is mounted in suitable bearings 74 on the frame as seen in Fig. 3 and carries a gear 75 which is given an intermittent motion by the mutilated gear 76 carried by the shaft 17 as seen clearly in Figs. 2 and 6. This mutilated gear is provided with the two diametrically oppositely disposed toothed portions 77 and 78, as seen best in Fig. 6, whereby intermittent motion is given to the gear 75 so as to actuate the feed rolls 61, 62 and 63

twice during each complete revolution of the gear 76, as will be readily understood upon reference to Figs. 2 and 6.

In connection with the scoring or creasing and cutting mechanism, I employ a punch mechanism for punching or cutting the locking tongues and coöperating slots, and this punching mechanism may be disposed either in advance of or to the rear of the scoring or creasing and cutting mechanism. In the present instance I have chosen to show it as disposed in advance thereof, as being the most desirable. In whichever position it is located, however, its function and operation are the same, being supported in the same frame, and operatively connected with the mechanism which actuates the creasing or scoring and cutting devices.

79 is the lower die plate mounted upon side portions 80 of the frame, which side portions are provided with longitudinal slots 81 in which the said lower die plate is adjustably mounted, as clearly shown in Figs. 7 and 11. This lower die plate and its adjustable dies 82 and 83 may be of any desired form to give to the paper the required cut or cuts, the dies 82 and 83 being adjustable transversely of the machine by means of the slots 84 and suitable adjusting devices coöperating therewith, as indicated in Figs. 7 and 11.

In Fig. 11 the paper 65 is indicated by dotted lines as disposed over the lower die or dies, being shown in its proper position by full lines in Fig. 7. The upper dies or punches 85 are adjustably mounted in their carrier 86 as is also the punch or die 87 for cutting the notch 88 in the side of the blank, as seen in Fig. 12. This carrier is actuated by the rods 89, one upon each side of the machine and pivotally connected as at 90 with lugs or ears 91 on the ends of the carrier 86, as seen best in Fig. 7. These rods are connected at their lower ends with the pin or roller 92 which they carry and which work in the cam slot 93 of the cam disk 94, the contour of which is seen best in Fig. 13, it being so shaped as to actuate the said rods twice during the complete revolution of the power shaft 17. This cam disk 94 is adjustably mounted on the shaft 95 by means of a set screw or the like 96 so it may be adjusted to conform to the adjustment of the dies and carrier, for an obvious purpose. The shaft 95 is mounted in suitable bearings 97 on the frame and at one end carries the worm 98 meshing with a worm gear 99 on the shaft 25, all as clearly seen in Figs. 1 and 3.

100 is a bracket or support suitably secured to the front end of the frame, as seen in Fig. 3, and upon this bracket are suitable bearings 101 for the shaft 102 upon which is wound the paper to be operated upon by the punches and by the scoring or creasing and cutting mechanism.

In some instances it may be desirable to make the blanks without any printing or designs or advertisements thereon, and it may also sometimes be found advantageous to do the printing on a separate machine. In Fig. 3 I have shown my improvement as adapted for use under such circumstances, the printing mechanism being omitted. In this case the roll of paper 103 is mounted in the bearings on the brackets 100, and a suitable tension device employed, comprising a roller 104 bearing against the paper, said roller being carried by an arm 105 pivotally mounted at 106 on the bracket or frame and acted upon by a spring 107 suitably secured as at 108 and tending to force said arm and its tension roller away from the frame for an obvious purpose, as will be understood from Fig. 3.

In order to assist the carrier 86 to return to its upward position I provide the springs 109, as seen best in Fig. 7 which are disposed about the pins or rods 110 depending from the carrier and guided in suitable openings 111 in the extensions 112, suitable means as the pins 113 being provided to limit the upward movement of the carrier. The springs, it will be noted, are disposed between the carrier and said extensions.

The idlers 55, hereinbefore described, are independently adjustable on their shaft in order that they may be set between the margins of the printing on the paper so as not to smear the same.

In order to adjust the feed of the rollers 61, 62 and 63 according to the length of the blank, the pivot 71 of the rod 66 is carried by a block 114 adjustable in a slot 115 extending radially of the disk 72 and provided with a pointer 116 movable over a scale 117 provided along one edge of said slot, such construction being illustrated clearly in detail in Fig. 5.

In some cases the feed mechanism may be disposed at the rear of the table 47 and a separate cut-off provided at such rear end for cutting the blanks from each other instead of cutting the same by the scoring and creasing mechanism so that the paper will be pulled instead of being pushed after it is acted upon by the scoring and creasing mechanism.

It is to be understood that in its passage through the machine the paper is operated on to form the ends of two adjacent blanks two blanks simultaneously, as seen in Fig. 12. The dies or punches are interchangeable and removable so that any desired form may be employed according to the character of the blank to be formed or the style of locking tongue and coöperating slit to be made in the paper.

In order that the feeding device 66 shall feed only in the upward movement thereof the gear or pinion 67 is loose upon its shaft and carries a pawl 67^a which is designed to engage a ratchet 67^b on the adjacent face of

the gear 68, as clearly illustrated in Fig. 15, so that as the feed bar 66 is moved upward the gear 68 will be revolved with the gear or pinion 67, but in the downward movement of the rack bar 66 the gear 67 will be revolved loosely on its shaft without imparting motion to the gear 68.

In Fig. 1 I have shown my improvements hereinbefore described, as combined with a printing mechanism which latter, however, may be of any suitable or approved form of construction so long as it will perform two printing operations during each entire revolution of the driving shaft 17 from which it is operated. Briefly stated the printing mechanism shown comprises a support 118 to which is pivotally connected, as at 119, one arm of the toggle lever 120, the other end of which is pivotally connected with the bed 121 pivotally supported, as at 122. Pivotally connected, as at 123, with the joint of the toggle lever is the rod 124, the lower end of which is connected with a wrist pin 125 on a disk 126 carried by the shaft 127 journaled in suitable bearings in the frame and carrying a worm wheel 128 meshing with a worm 129 on an extension of the shaft 95 which is operated by connections from the driving shaft 17 in a manner previously described.

130 is the tympan.

140 are tension bars through which the paper 65 is passed, one of said bars being disposed upon the under side of the tympan while a guide roller 139 is arranged at the upper end thereof and over which the paper passes. A similar roller 138 supported in the frame below the tension bars serves to guide the paper vertically to such bars, the paper in this instance being fed to the machine from a roller, not shown, which may be supported in any well known way.

There are two inking plates 136 and 137, as shown and their movement is so timed as to insure an impression upon the paper twice during each revolution of the driving shaft 17 and consequently of the shafts 95 and 127, they being carried by the bed 121, and the inking rollers 135 are so disposed and timed in their movements as to supply ink to first one and then the other of said inking plates.

134 is a bar or support one end of which is designed to be fixed to some suitable fixed support as a part of the frame and its other end pivotally connected as at 133 with the arm 132 secured as at 131 to the inking roller support, all as clearly illustrated in Fig. 1.

With the parts constructed and arranged substantially as above described, the operation is simple and will be readily understood from such description especially when taken in connection with the annexed drawings, and a further detailed description thereof is not deemed necessary.

What I claim as new is:—

1. In a machine for the purpose described, a paper support, a creasing or scoring member a coöperating rocking member disposed above said support, means for actuating the same and coacting registering means for said members.

2. In a machine for the purpose described, a paper support, a creasing or scoring member a coöperating rocking member disposed above said support, means for actuating the same, coacting registering means for said members, and a coöperating punching mechanism.

3. In a machine for the purpose described, a paper support, a creasing or scoring member a coöperating rocking member disposed above said support, means for actuating the same, coacting registering means for said members, a coöperating punching mechanism, and a printing mechanism.

4. In a machine of the character described, a creasing or scoring mechanism, a rocking member coöperating with the same registering means on said mechanism and member, punching devices, a printing mechanism, and means for actuating them in unison.

5. In a machine of the character described, a creasing or scoring mechanism, a rocking member coöperating with the same, coöperating means for keeping said parts in alinement and raising the rocking member at each end of its stroke, a punching mechanism, and a coöperating feeding device.

6. In a machine of the character described, a creasing or scoring mechanism, a rocking member coöperating with the same, coöperating means for keeping said parts in alinement and raising the rocking member at each end of its stroke, a punching mechanism, a coöperating feeding device, and a coöperating printing mechanism.

7. In a machine of the character described, a creasing or scoring mechanism, a rocking member coöperating with the same, a driving shaft, means connected therewith for actuating said rocking member twice during each entire revolution of said shaft and means coöperating with said rocking member for lifting the same at each end of its stroke out of contact with the paper.

8. In a machine of the character described, a creasing or scoring mechanism, a rocking member coöperating with the same, a driving shaft, means connected therewith for actuating said rocking member twice during each entire revolution of said shaft, means coöperating with said rocking member for lifting the same at each end of its stroke out of contact with the paper, and a coöperating punching mechanism.

9. In a machine of the character described, a creasing or scoring mechanism, a rocking member coöperating with the same, a driv-

ing shaft, means connected therewith for actuating said rocking member twice during each entire revolution of said shaft, means coöperating with said rocking member for lifting the same at each end of its stroke out of contact with the paper, a coöperating punching mechanism, and means for actuating the latter twice during each revolution of the driving shaft.

10. In a machine of the character described, a creasing or scoring mechanism, a punching mechanism, a printing mechanism and means coöperatively connected for actuating each of said mechanisms in unison twice during each revolution of the driving shaft said casing and scoring mechanism embodying a stationary member and a substantially horizontal rocking member and means for lifting said rocking member at each end of its stroke out of contact with the paper.

11. In a machine of the character described, a creasing or scoring mechanism embodying a horizontal stationary member and a substantially horizontal rocking member coöperating therewith and means for lifting said rocking member at each end of its stroke out of contact with the paper, a feed device and means for adjusting the latter in accordance with the character of the blank to be formed.

12. In a machine of the character described, a creasing or scoring mechanism, embodying a horizontal stationary member and a substantially horizontal rocking member coöperating therewith and means for lifting said rocking member at each end of its stroke out of contact with the paper, a feed device, means for adjusting the latter in accordance with the character of the blank to be formed, and a coöperating punching mechanism.

13. In a machine of the character described, a creasing or scoring and cutting mechanism embodying a horizontal stationary member and a substantially horizontal rocking member coöperating therewith and means for lifting said rocking member at each end of its stroke out of contact with the paper, a completed-blank receptacle and an interposed feeding device.

14. In a machine of the character described, a creasing or scoring and cutting-mechanism embodying a horizontal stationary member and a substantially horizontal rocking member coöperating therewith and means for lifting said rocking member at each end of its stroke out of contact with the paper, a completed-blank receptacle and an interposed feeding device embodying independently adjustable idlers.

15. In a machine of the character described, a creasing or scoring and cutting mechanism embodying a horizontal stationary member and a substantially horizontal rocking member coöperating therewith and means for lifting said rocking member at each end of its stroke out of contact with the paper, a completed-blank receptacle, an interposed feeding device embodying independently adjustable idlers, and a coöperating punching mechanism.

16. In a machine of the character described, a creasing or scoring and cutting mechanism embodying a horizontal stationary member and a substantially horizontal rocking member coöperating therewith and means for lifting said rocking member at each end of its stroke out of contact with the paper, a completed-blank receptacle, an interposed feeding device embodying independently adjustable idlers, a coöperating punching mechanism, and a coöperating printing device.

17. In a machine of the character described, a creasing or scoring mechanism embodying a horizontal stationary member and a substantially horizontal rocking member coöperating therewith and means for lifting said rocking member at each end of its stroke out of contact with the paper, a punching device, a driving shaft common to both, and operative connections from said driving shaft for actuating said mechanisms in unison.

18. In a machine of the character described, a creasing or scoring mechanism embodying a horizontal stationary member and a substantially horizontal rocking member coöperating therewith and means for lifting said rocking member at each end of its stroke out of contact with the paper, a punching device, a printing mechanism and driving shaft common to all, and operative connections from said driving shaft for actuating said mechanisms in unison.

19. In a machine of the character described, a fixed scoring bed, a rocking member means carried by said member for holding the blank against said bed, a driving shaft, means for rocking said member back and forth during each revolution of the driving shaft and coöperating rack members for keeping the rocking member in proper alinement with its coöperating member.

20. In a machine of the character described, a fixed scoring bed, a rocking member means carried by said member for holding the blank against said bed, a driving shaft, means for rocking said member back and forth during each revolution of the driving shaft, coöperating rack members for keeping the rocking member in proper alinement with its coöperating member, and means for lifting said rocking member at each end of its stroke.

21. In a machine of the character described, a fixed scoring bed, a rocking member means carried by said member for holding the blank against said bed, a driving shaft, means for rocking said member back and forth during each revolution of the driv-

ing shaft and coöperating rack members for keeping the rocking member in proper alinement with its coöperating member, said actuating means for the rocking member having a yielding portion.

22. In a machine of the character described, a fixed scoring bed, a rocking member means carried by said member for holding the blank against said bed, a driving shaft, means for rocking said member back and forth during each revolution of the driving shaft, coöperating rack members for keeping the rocking member in proper alinement with its coöperating member, and means for lifting said rocking member at each end of its stroke, said actuating means for the rocking member having a yielding portion.

23. In a machine of the character described, a creasing or scoring and cutting mechanism embodying a fixed scoring bed, and a rocking member mounted for coöperation therewith and carrying means for holding the blank against said bed, a driving shaft, and connections for operating the same, means coöperating with said rocking member for lifting the latter at each end of its stroke out of contact with the paper a completed-blank receptacle and means for lowering the same step by step.

24. In a machine of the character described, a creasing or scoring and cutting mechanism, a driving shaft, and connections for operating the same, a completed-blank receptacle and means for lowering the same step by step, said means being operatively connected with the driving shaft.

25. In a machine of the character described, a punching device a creasing or scoring and cutting mechanism, a driving shaft and connections for operating the same, a completed-blank receptacle, and means for lowering the same step by step, said means being operatively connected with the driving shaft.

26. In a machine of the character described, a printing mechanism and a punching device a creasing or scoring and cutting mechanism, a driving shaft and connections for operating the same, a completed-blank receptacle, and means for lowering the same step by step, said means being operatively connected with the driving shaft.

27. In a machine of the character described, a printing mechanism, a punching device a creasing or scoring and cutting mechanism, a driving shaft and connections for operating the same, a completed-blank receptacle, means for lowering the same step by step, said means being operatively connected with the driving shaft, and a feeding mechanism actuating from the driving shaft.

28. In a machine of the character described, a printing mechanism, a punching device a creasing or scoring and cutting mechanism, a driving shaft and connections for operating the same, a completed-blank receptacle, means for lowering the same step by step, said means being operatively connected with the driving shaft, a feeding mechanism actuating from the driving shaft, and means for adjusting the feeding device.

29. In a machine of the character described, a printing mechanism, a punching device a creasing or scoring and cutting mechanism, a driving shaft and connections for operating the same, a completed-blank receptacle, means for lowering the same step by step, said means being operatively connected with the driving shaft, a feeding mechanism actuating from the driving shaft, means for adjusting the feeding device, and means for adjusting said step by step lowering means.

30. In a machine of the character described, a driving shaft, a mutilated gear thereon, a feeding device, means actuated by said mutilated gear for controlling the movement of said feeding device, and a scoring or creasing mechanism comprising a fixed scoring bed, a rocking member for coöperation therewith carrying means for holding the blank against said bed, and means for lifting the rocking member at each end of its stroke.

Signed by me at Washington D. C. this 23rd day of July 1907.

FREDERICK E. KUSTER.

Witnesses:
E. H. BOND,
M. A. BOND.