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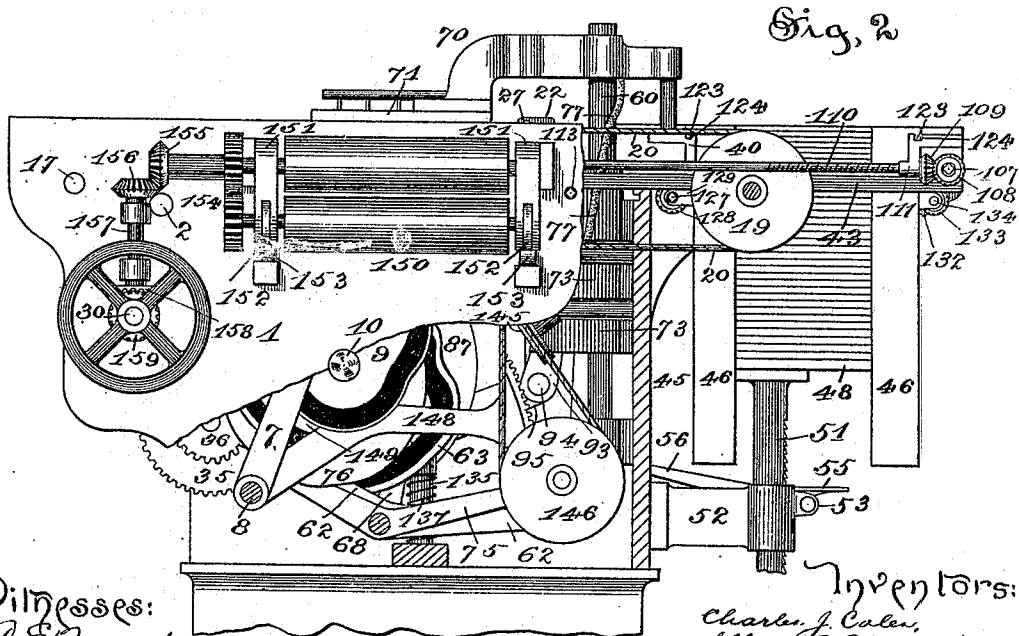
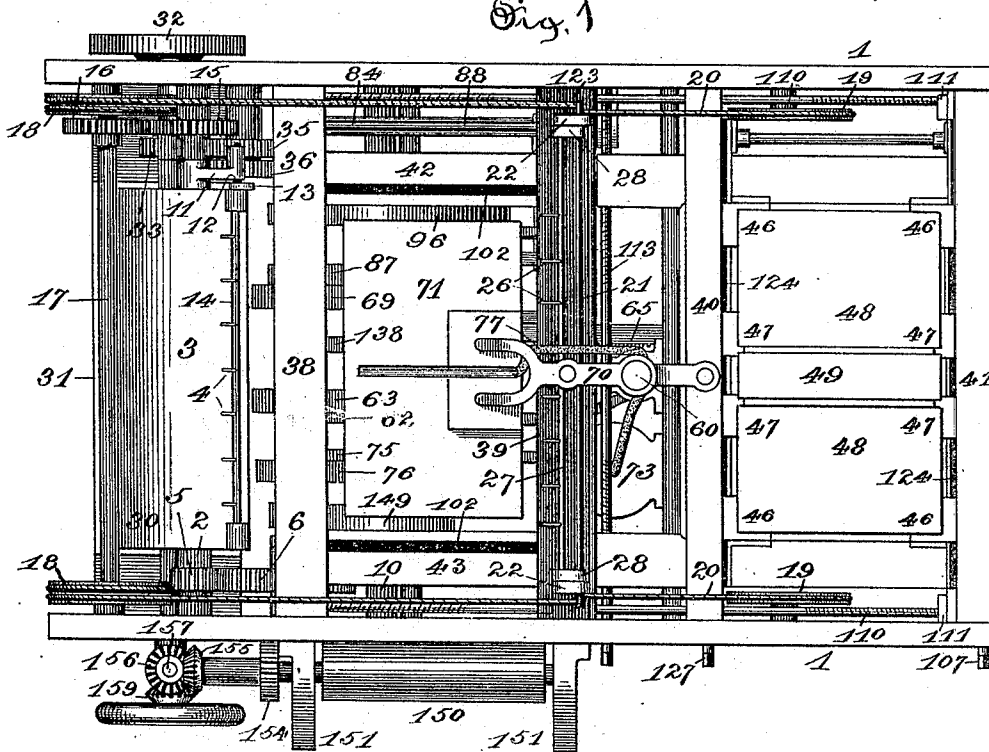
9 Sheets—Sheet 1.

C. J. & A. E. COLES, J. C. SMITH, W. JAMIESON &  
A. I. JACOBS.

MACHINE FOR MAKING BOOK COVERS.

No. 513,453.

Patented Jan. 23, 1894.



Witnesses:

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A. L. Dean

Inventors:

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by Harry P. Williams,  
attys.

(No Model.)

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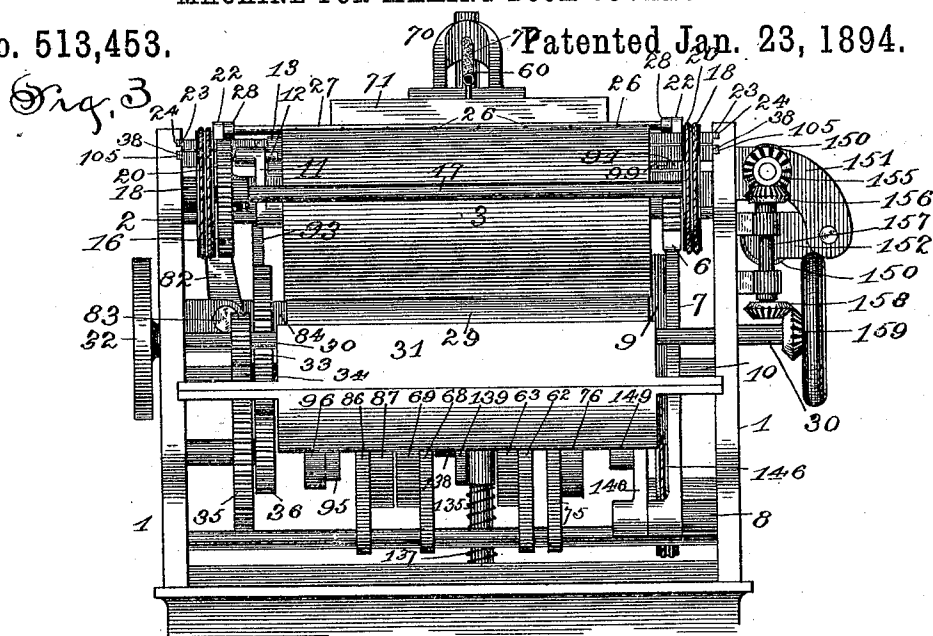


Fig. 30

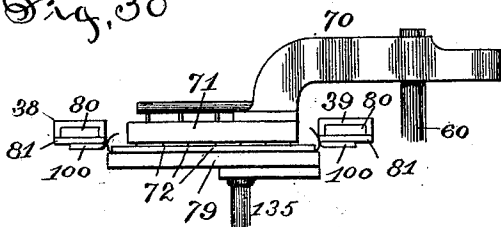


Fig. 32

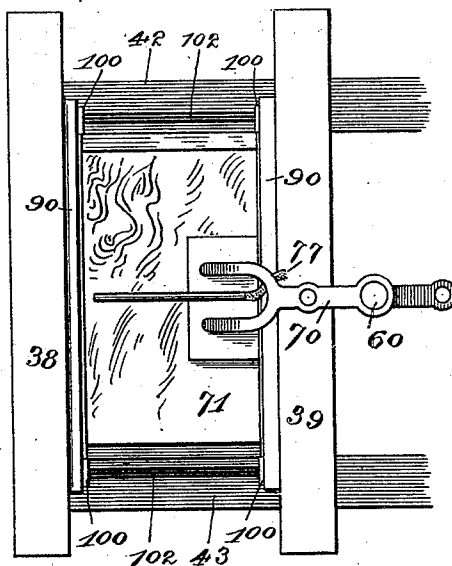


Fig. 31

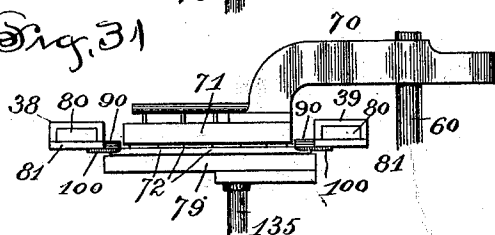
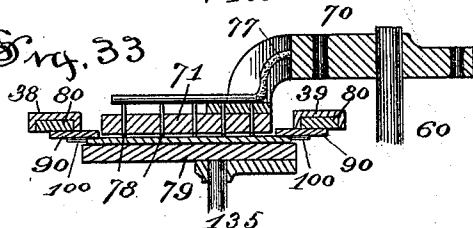


Fig. 33



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(No Model.)

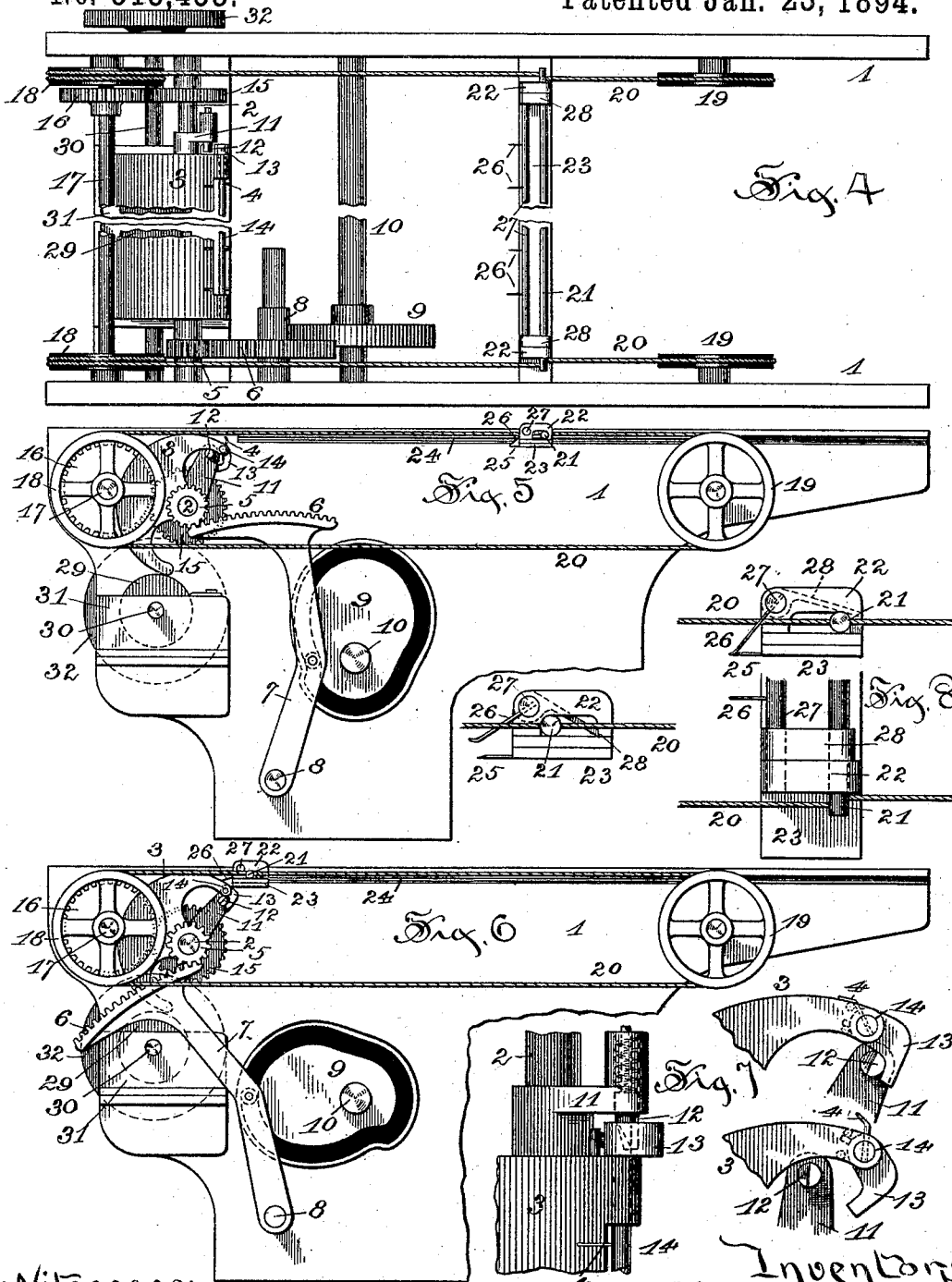
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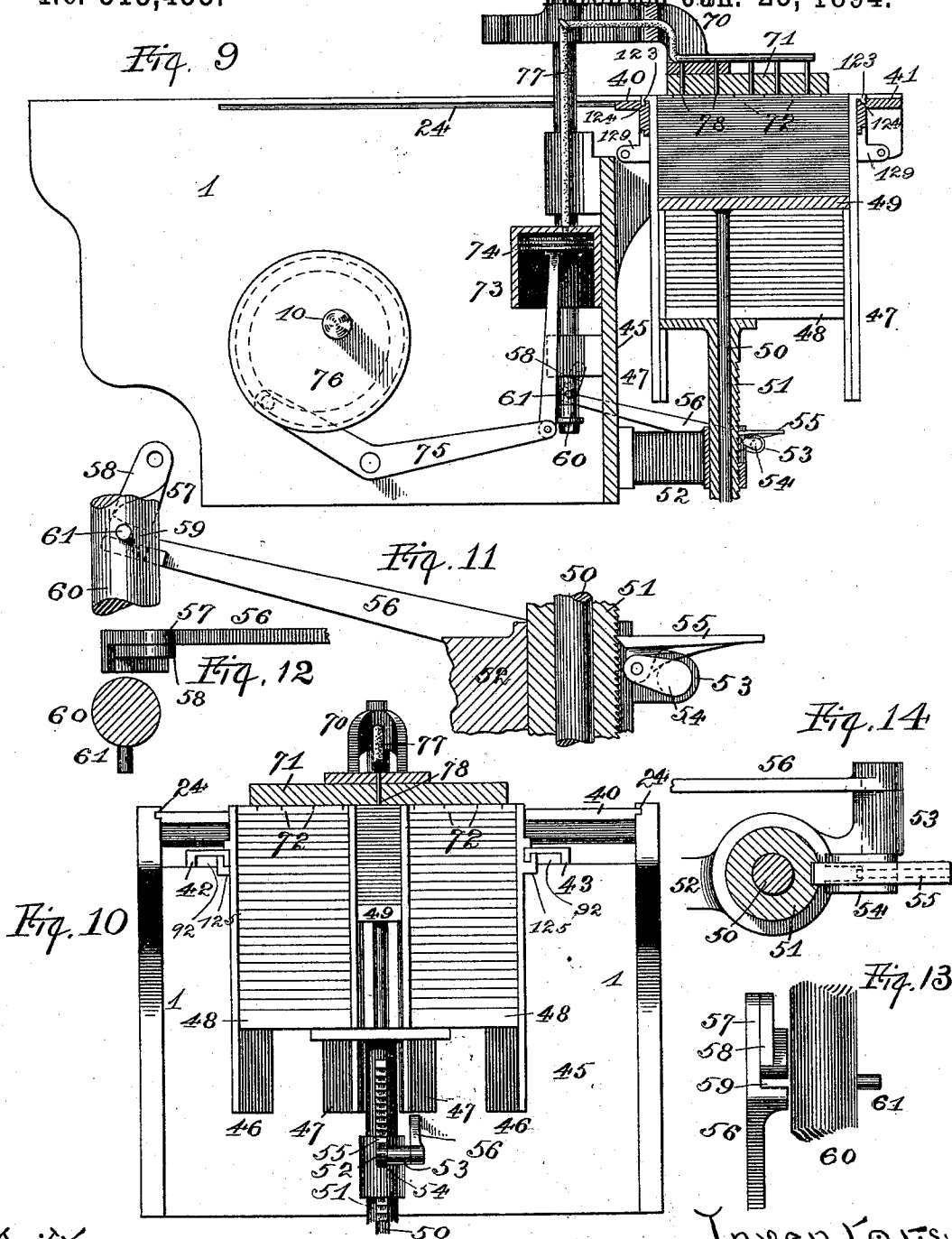
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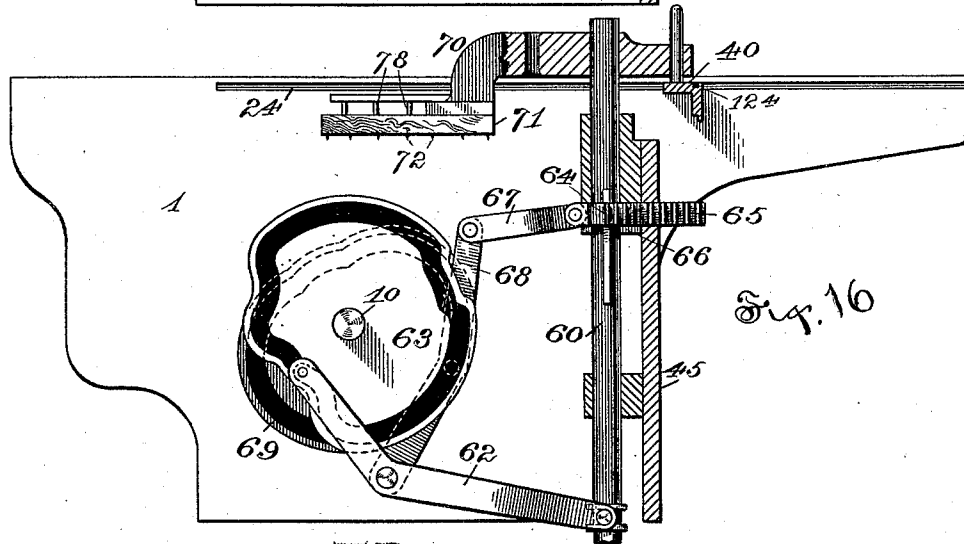
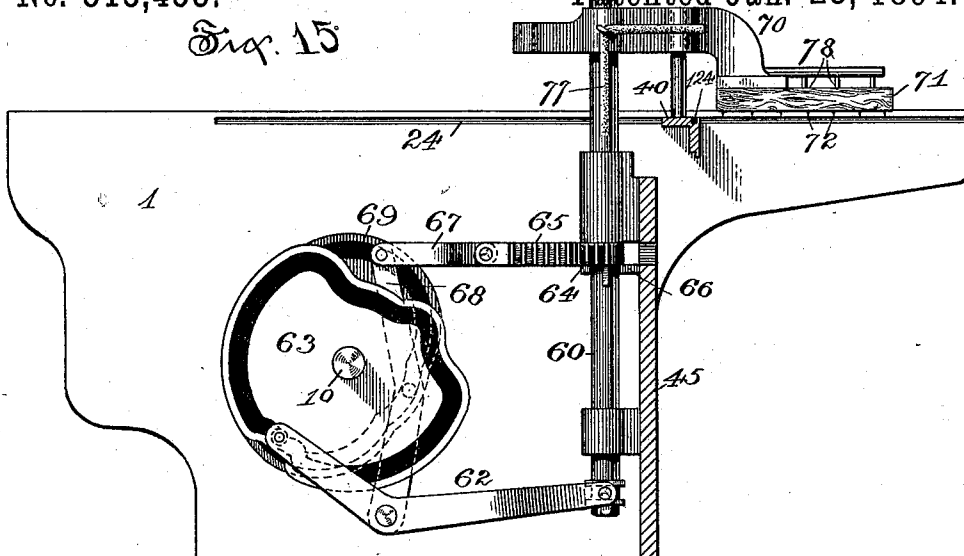
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# MACHINE FOR MAKING BOOK COVERS.

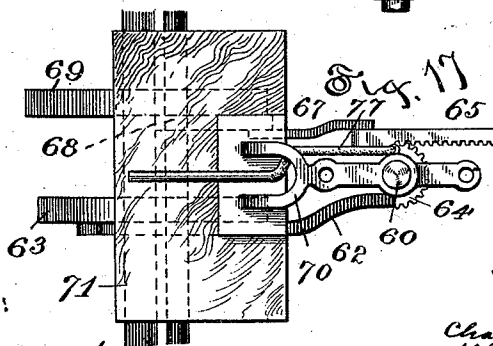
No. 513,453.

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Fig. 15.



Aug. 16



Aug. 17

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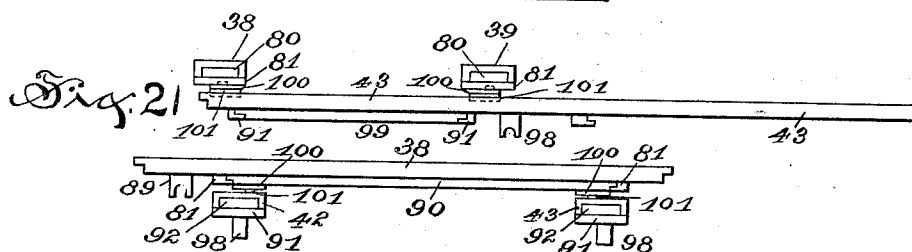
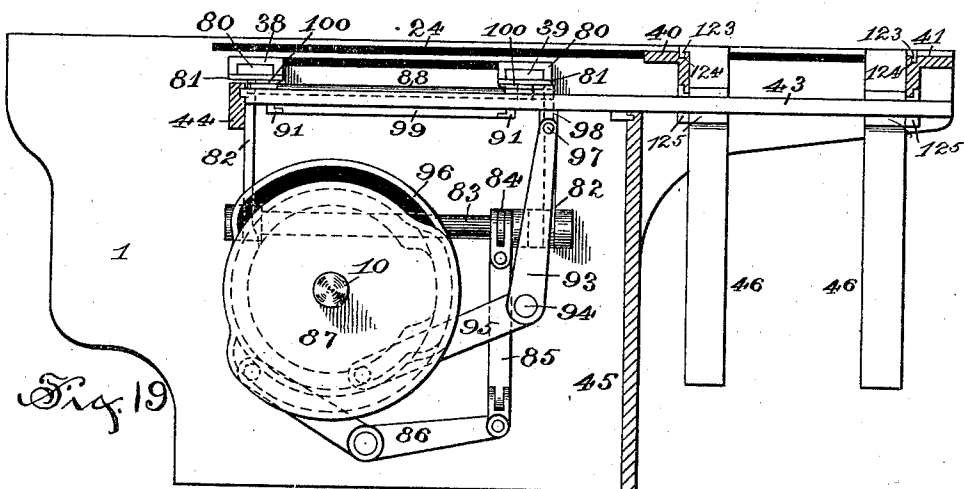
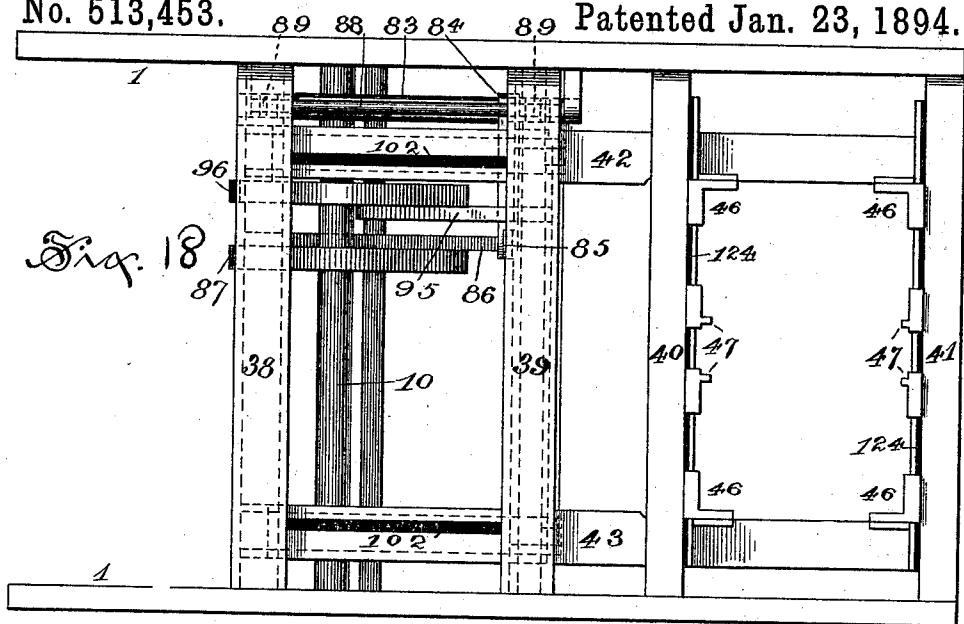
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(No Model.)

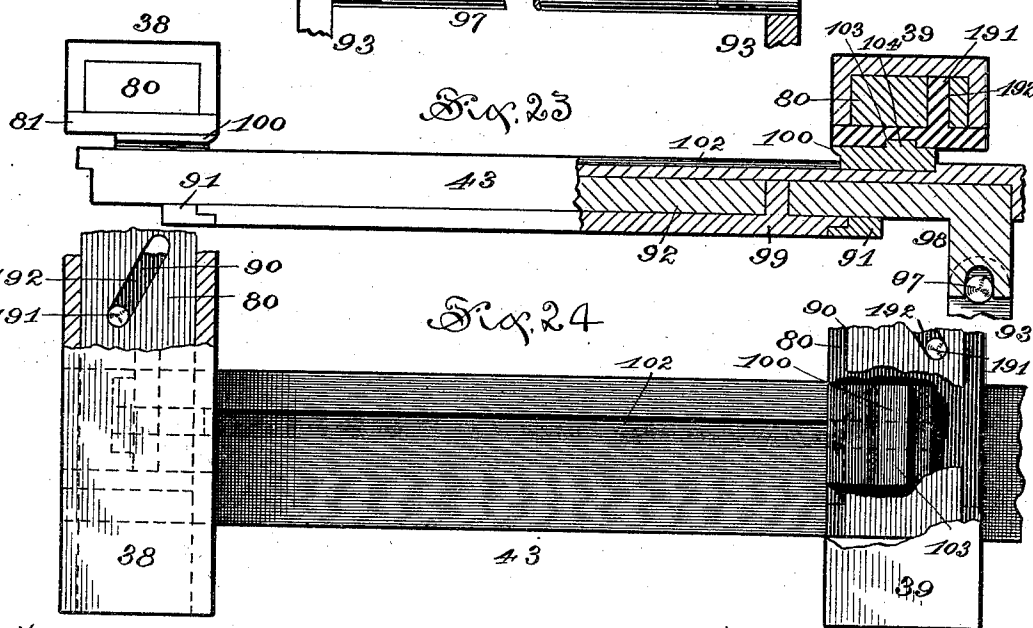
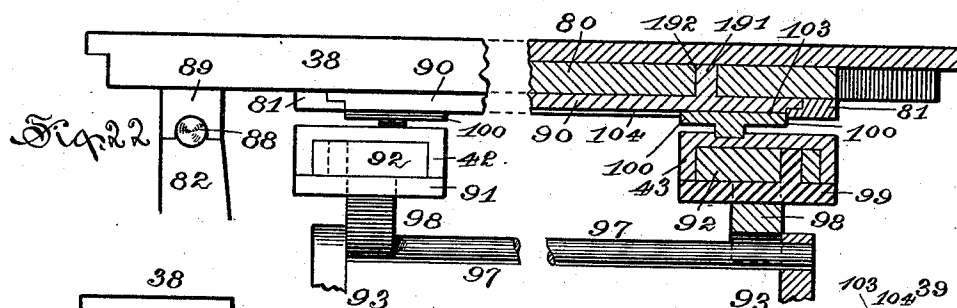
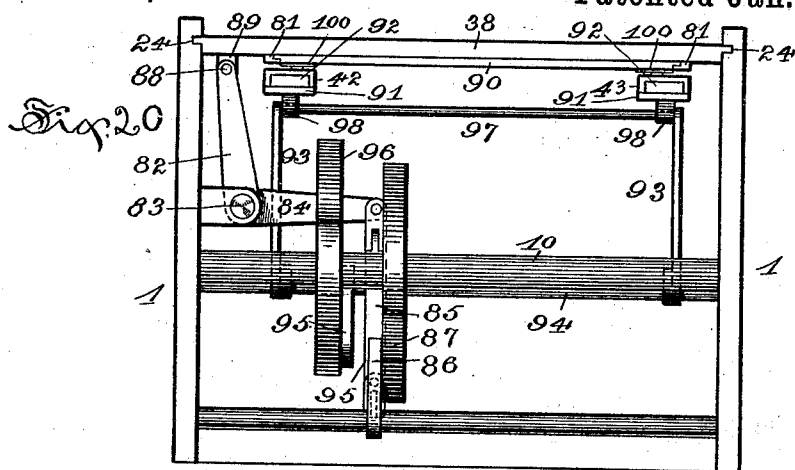
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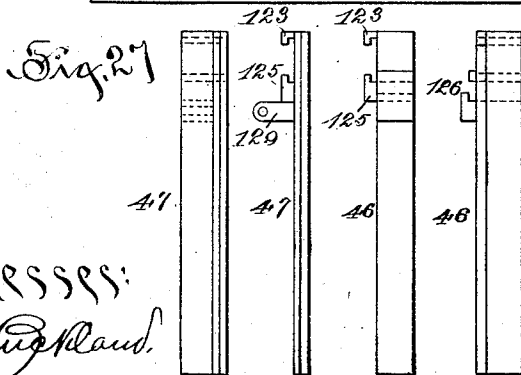
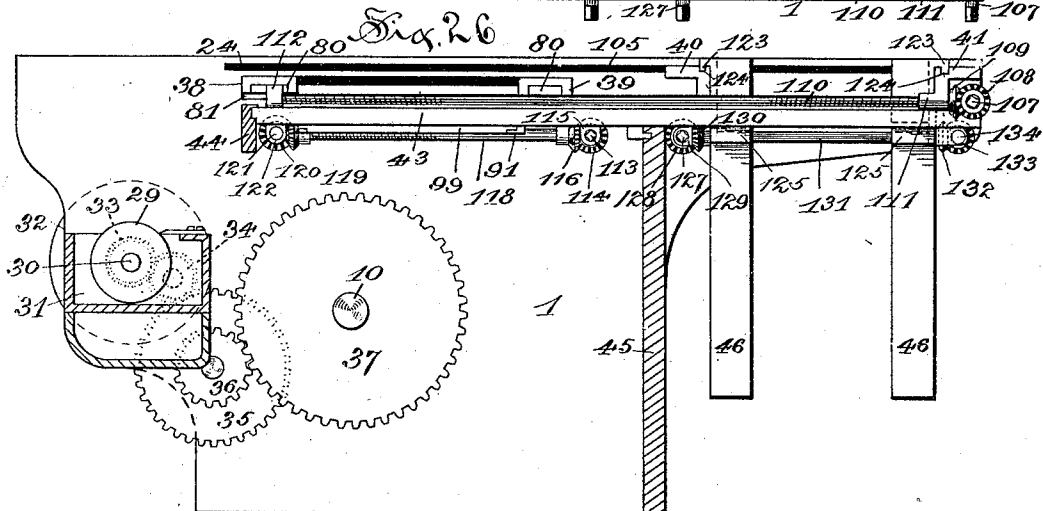
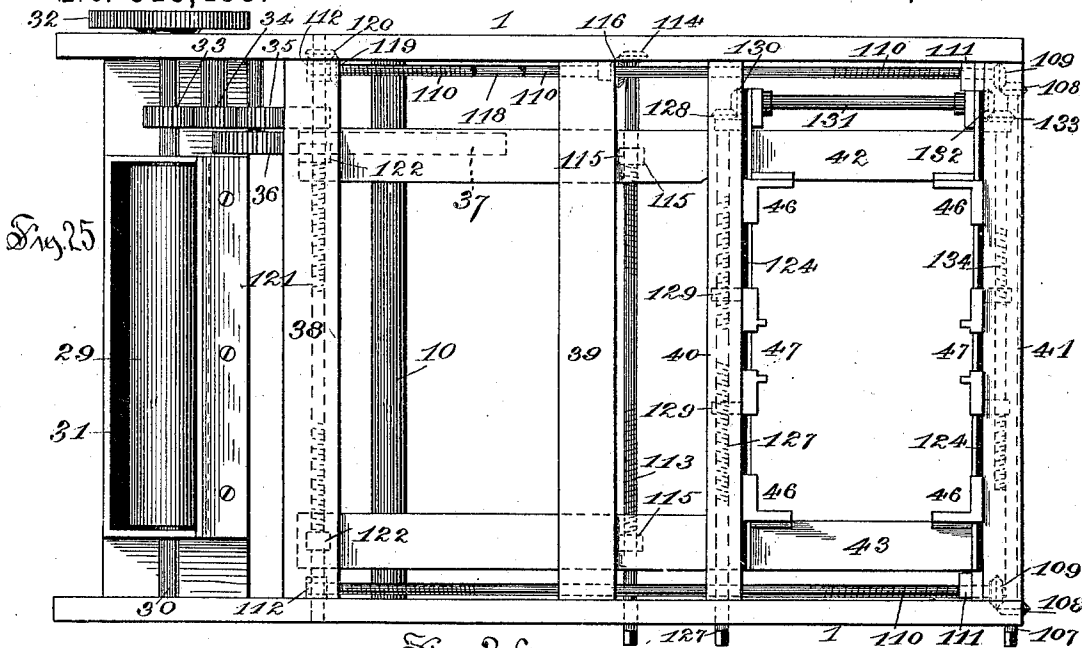
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C. J. & A. E. COLES, J. C. SMITH, W. JAMIESON &  
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(No Model.)

9 Sheets—Sheet 9.

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MACHINE FOR MAKING BOOK COVERS.

No. 513,453.

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Fig. 28

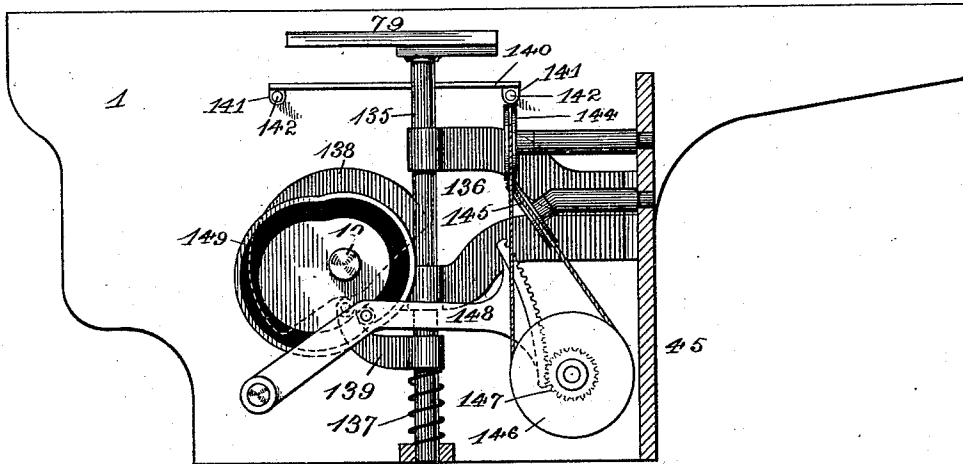
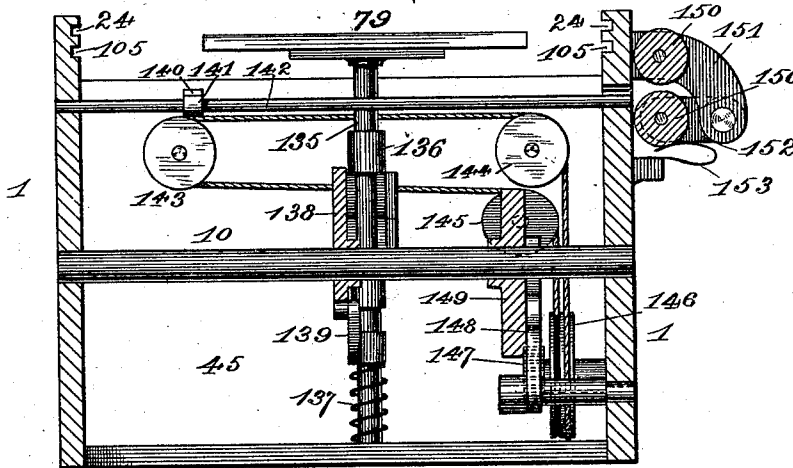


Fig. 29



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# UNITED STATES PATENT OFFICE.

CHARLES J. COLES, ALBERT E. COLES, JOHN C. SMITH, AND WILLIAM JAMIESON, OF LONDON, ENGLAND, AND ARTHUR I. JACOBS, OF HARTFORD, CONNECTICUT, ASSIGNORS TO THE SMYTH MANUFACTURING COMPANY, OF HARTFORD, CONNECTICUT.

## MACHINE FOR MAKING BOOK-COVERS.

SPECIFICATION forming part of Letters Patent No. 513,453, dated January 23, 1894.

Application filed July 25, 1892. Serial No. 441,135. (No model.)

*To all whom it may concern:*

Be it known that we, CHARLES J. COLES, ALBERT E. COLES, JOHN C. SMITH, and WILLIAM JAMIESON, subjects of the Queen of Great Britain, residing at London, England, and ARTHUR I. JACOBS, a citizen of the United States, residing at Hartford, in the county of Hartford and State of Connecticut, have invented certain new and useful Improvements in Machines for Making Book-Covers, of which the following is a full, clear, and exact specification.

The invention relates to the class of machines which apply the stiffening to the outside of book covers or cases, the object being to provide a machine that will automatically and continuously form completed cases by gluing and folding the cloths about the boards and back linings which is readily adjustable for forming cases of various sizes and shapes.

To this end the invention resides in a machine having receptacles for the boards and back linings, and co-operating mechanisms for, at intervals, transferring the boards and back linings from the receptacles to the cloths; for gluing the cloths and folding them around the boards and back linings, and for discharging the completed cases from the machine and hardening the glue, as more particularly hereinafter described.

Referring to the accompanying drawings: Figure 1 is a plan of the machine. Fig. 2 is side elevation with a portion of the frame removed. Fig. 3 is a front view. Fig. 4 is a plan of the mechanism for gluing and drawing the cloth into the machine. Fig. 5 is a side elevation of the same. Fig. 6 is a similar view with the parts in another position. Figs. 7 are enlarged views of a portion of the gluing cylinder, illustrating the method of holding the cloth. Figs. 8 are enlarged views of the drawing slide illustrating its method of gripping the cloth. Fig. 9 is a detail section through the back lining receptacle, illustrating the means of picking up the back linings and boards and elevating them to the picker. Fig. 10 is a rear view of the same. Fig. 11 is a detail enlarged side elevation of

a part of the board elevating mechanism. Fig. 12 is a plan view of the end of same at the picker column. Fig. 13 is a front elevation of the same. Fig. 14 is a plan of the end of same at the elevator column. Fig. 15 is a side elevation of the picker mechanism with the picker in position to lift the boards and back lining. Fig. 16 is a similar view showing the position occupied after the cloth has been folded around the boards and back linings. Fig. 17 is a plan of this mechanism in the latter position. Fig. 18 is a plan of the folding mechanism. Fig. 19 is a side elevation of the same. Fig. 20 is a front elevation of the same. Figs. 21 are detail side and end views of the folding bars. Fig. 22 is an enlarged end view, with part in section, of the folding bars. Fig. 23 is a side view of same. Fig. 24 is a plan, with parts broken away, of a portion of the same. Fig. 25 is a plan of the folding bars and the board and back lining receptacles showing the means whereby they are adjusted, also the glue tank, roll, and driving mechanism. Fig. 26 is a side elevation of the same. Figs. 27 are detail views of the board and back lining guides. Fig. 28 is a side elevation of the supporting platform and discharging mechanism. Fig. 29 is a front view of same. Fig. 30 is a detail view of portions of the picker, the folders and platform, before the first fold. Fig. 31 is a similar view after the first fold. Fig. 32 is a plan view after the first fold. Fig. 33 is a section after the first fold.

In the views 1 indicates the frame of the machine. Near the front of the machine supported by the sides transversely is a shaft 2 loosely mounted upon which is a cylinder or segment of a cylinder 3 with a number of gripping fingers 4. Fastened to this shaft 2 is a pinion 5 with which meshes a rack 6 on a lever 7 pivoted on a stud 8 projecting from one side of the frame. A roller on this lever engages the cam 9 fast to the cam shaft 10. The shaft 2 has an arm 11 with a spring pin 12 that projects into the path of a hooked arm 13 on a rod 14 that extends the length of the cylinder and bears the fingers 4. A gear 15

on this shaft meshes with a gear 16 on shaft 17 that bears sheaves 18 around which and the sheaves 19 pass cords 20 that are fastened to the ends of a rod 21 loosely held by slotted plates 22 to a slide 23 that is free to move, with its ends in the grooves 24 in the sides of the frame, toward and from the cylinder. Fingers 25 project from the front edge of this slide, and complementary fingers 26 project from a rod 27 loosely held by the plates 22 and provided with arms 28 that rest on rod 21. (Figs. 4, 5, 6, 7, and 8.)

Below the cylinder on the main driving shaft 30 is a roller 29 dipping into a tank or glue receptacle 31 that has a heating chamber below for keeping the glue liquid. On the shaft 30 is the driving pulley 32 and a gear 33 meshing with an idle gear 34 that meshes with a gear 35 on a shaft bearing a gear 36 in mesh with a gear 37 on cam shaft 10. (Figs. 25 and 26.) The rotation of cam 9 oscillates lever 7 with rack 6 which through pinion 5 rotates shaft 2 alternately in opposite directions. A piece of cloth of the proper size is laid upon the cylinder with its edges under the fingers 4, and when the shaft 2 starts the spring pin 12 on the arm 11 engages the hook 13 and first closes down the fingers so they grip the cloth. Then further rotation of the shaft and arm carries the cylinder around causing the cloth on its surface to rub in contact with the surface on the roller 29 and become besmeared with glue. The return movement of the rack rotates the shaft in the opposite direction carrying the arm around without rotating the cylinder. The cam is cut to rotate the shaft slightly more than a revolution so that the pin 12 will stop away from the hook 13, allowing it to drop by gravity so as to lift the fingers and release the cloth. The shaft 2 through the gears 15 and 16 rotates the sheaves 18 so the cords 20 draw up the slide 23 to grasp the cloth as the fingers on the cylinder release it, and when the shaft 2 rotates in the opposite direction the sheaves and cord take back the slide which draws with it the cloth. When the cord begins to pull the rod 21 moves to the front end of the slots in the plates 22, which allows the arms 28 to drop and open the fingers so as to receive the cloth when they reach the cylinder, and when the cord commences to pull back the rod moves to the rear end of the slots first closing the fingers upon the cloth by means of the arms 28, then pulling the slide and the glued cloth backward.

Extending transversely of the machine with their ends in grooves near the top of the sides are bars 38, 39, 40 and 41, and extending longitudinally at a lower level are bars 42 and 43 supported at the front by a cross beam 44 and near the middle upon the top of the wall 45. (Figs. 18 and 19.) Near the rear between the bars 40, 41, 42, and 43, is the board and back lining receptacle which is formed by the corner posts 46 that are adjustably held to both the longitudinal and transverse

bars, and the center guides 47, the boards being held on each side and the back linings in the center on an elevating bottom which raises the boards and the back linings up to the picker after each removal. The boards being much the thicker, after each removal have to be raised farther than the back linings, so the bottom of the receptacle, or the elevator, is formed with two side floors 48 for the boards, supported upon a tube 51, and a center floor 49 for the back linings, supported upon a column 50 that passes through the tube 51. (Figs. 9 and 10.) The tube 51 has teeth on one side and is held by a bracket 52 that projects from the wall 45.

On one end of a short shaft supported in a bearing 53 on the bracket 52 is an arm 54 that holds a spring pawl 55 in contact with the teeth on the tube, and on the other end of this short shaft is a lever 56 that extends forward to the vicinity of the picker column 60, where the lever bears an arm 57 with a latch 58.

From one side of the picker column 60 projects a pin 61, that when the picker is revolved into one position enters the slot 59 between the end of the lever and the latch so that when the picker column reciprocates the pin oscillates the lever 56 and causes the pawl to lift the elevator and raise the boards and back linings a distance equal to the thickness of the boards, to lift the next into the position of those removed. (Figs. 9, 10, 11, 12, 13, and 14.) Of course as the back linings are not as thick as the boards, they will be lifted too great a distance, but as the floor which supports the back linings is simply held with its column in the elevator tube by friction the back linings which are raised too high are pushed down by the pressure of the picker as it descends to pick up the boards. The picker column 60 which is loosely held in bearings secured to the wall 45 and is vertically reciprocated by a lever 62 oscillated by cam 63 on shaft 10, has keyed to it a segmental gear 64 meshing with which is a rack 65 supported between the end of the upper column bearing and a plate 66 secured to said bearing. This rack is connected by a link 67 with a lever 68 that is oscillated by cam 69 on shaft 10. Upon the upper end of the picker column is the picker arm 70 that has a board 71 bearing on each side of the under surface picking pins 72. (Figs. 15, 16, and 17.)

Secured to the wall 45 is a cylinder 73 in which a piston 74 is reciprocated when the lever 75 is oscillated by cam 76 on shaft 10 forming a pump. From the closed end of this cylinder a tube 77 leads to openings 78 made through the center of the picker, so that according to the direction of reciprocation of the piston air is pumped from or sucked in through these openings. (Figs. 1, 2, 3 and 9.) As the slide draws the cloth from the gluing cylinder the cam 63 and lever 62 draws down the picker so the pins fasten into the boards, and at the same time the cam 76 and lever 75 draws down the pump causing such a suction

of air along the center of the picker as to lift and hold one of the back linings. The picker with this load is raised slightly to clear the guides, and then by cam 69, rack 65 and segment 64 is rotated one half of a revolution and the boards and back lining deposited upon the glued side of the cloth which has been drawn by the slide 23 over the platform 79. (Figs. 1, 28 and 29.) When in this position the folders operate to lay the cloth over the edges of the boards and back linings.

In a hollow in the under side of the bars 38 and 39, held by gibs 81, are slides 80 that are reciprocated transversely of the machine by rocker arms 82 on shaft 83 that has an arm 84 which is connected by a link 85 with a lever 86 which is oscillated by the cam 87 on shaft 10, the upper ends of the arms 82 being connected by a rod 88 that passes through lugs 89 projecting from the bottom of the slides. (Figs. 18, 19, 20, 21, and 22.) The gibs 81 loosely hold the ends of folding plates 90 that have pins 191 projecting from their upper surface into slots 192 cut diagonally in the slides 80, so that when the slides 80 are reciprocated transversely of the machine the slots and pins cause the folding plates 90 to move edgewise toward or from each other. (Figs. 22, 23, and 24.)

In a hollow in the under side of the bars 42 and 43 which are supported at a lower level, held by gibs 91 are slides 92 that are reciprocated longitudinally of the machine by lever 93 on shaft 94 that is rocked by a lever 95 which has a roll running in a cam 96 on shaft 10. The upper ends of these levers 93 are joined by a rod 97 that passes through lugs 98 projecting from the bottom of the slides. (Figs. 18, 19, 20, 21, 22, 23, and 24.) The gibs 91 loosely hold the ends of folding plates 99 that have pins projecting from their upper surface into diagonal slots in the slides, as described in relation to the slides and plates supported by the transverse bars, so that when the slides are reciprocated these folding plates move toward each other. (Figs. 21, 22, 23, and 24.) When the cam 63 has caused the picker 70 to force the boards, back lining and cloth down through the opening between the transverse bars, and the edges of the cloth stand up, (Fig. 30,) the plates 90 are moved toward each other and fold the cloth over the end edges of the boards and back lining; then when the cam 63 pulls the picker 70 still lower and the other edges of the cloth stand up, the plates 99 are moved toward each other and fold the cloth over the side edges of the boards.

In order to make a neat fold at the corners, to the bottom of the slides 90 that make the first fold of the cloth over the ends of the boards, there are adjustably attached creasers or nickers 100 that project slightly below the level of the folders, and when the folding plates lay the cloth over the ends of the boards and back linings these creasers travel along the side edges creasing the cloth and sticking

it together beyond the boards so that neat corners will be made when the second folders turn the cloth over the side edges. (Figs. 22, 23, 30, and 31.) These creasers are supported by tongues 101 that project into and move in mortises 102 cut longitudinally in the top of the lower bars 42, 43, and they are connected with the folding plates 90 by tongues 103 that move in mortises 104 cut longitudinally in the bottom of the plates. (Figs. 22, and 23.) When the plates operate to fold the cloth the creasers move with them, the tongues 101 sliding freely in the mortises 102, and when the lower bars are moved for adjustment to conform to cases of different widths the creasers move with them, the tongues 103 moving in the mortises 104.

In order to provide for the folding of the cloth over boards of varying widths and lengths for cases of different sizes the folders must be adjustable, and the board and back lining receptacles should be similarly adjustable. To accomplish this the bars 39, 40 are permanently attached at their ends to the sides of the machine, the bar 38 is loosely supported with its ends in grooves 105 and bar 41 is similarly supported in grooves 24 in the sides, (Figs. 25, and 26,) while the bars 42, 43, are movably supported below, at the front end by a transverse beam 44 and near the center by the cross wall 45. The adjustment of these bars is accomplished by means of screws and this mechanism is shown on Sheet 8. A rod 107 with a squared end for a handle or wrench, extends transversely of the machine at the rear and bears near the sides gears 108 that mesh with gears 109 on rods 110 that extend longitudinally of the machine. These rods 110 are provided with right and left threads near the ends, on one of which are threaded nuts 111 secured to the bar 41, while on the other are threaded nuts 112 attached to the bar 38. According to the direction in which the rod 107 is turned the bars 38, 41, move in the slots in the frame toward or from the bars 39, 40, to increase or diminish the distance according to the length of the boards to be used in forming the cases.

A rod 113 with a squared end for a handle or wrench, extends transversely near the middle of the machine with right and left threads on which are nuts 115 projecting from near the middle of the bars 42, 43. This rod 113 has a gear 114 meshing with a gear 116 on a rod 118 that extends parallel with the side of the frame, and bears a gear 119 that meshes with the gear 120 on the rod 121, that extends across the machine. This rod 121 also has right and left threads on which are nuts 122 that project from the bottom of the front ends of the bars 42, 43, so that when the rod 113 is rotated the bars 42, 43, are moved toward or from each other to adjust the space between them, according to the width of the boards and back linings to be used in forming the cases. The bars 40, 41, are also connected with the bars 42, 43, by the board and back

lining guides 46, 47. Each of these guides has a tongue 123 that projects into a slot 124 in the top of the transverse upper bars, and a tongue 125 that projects back of the lower edge of these bars so the guides are movable along the edge of the upper bars, while the corner board guides 46 are also movably held to the edge of the lower bars 42, 43, by projecting tongues 126. When the bars 40 41 are moved the corner guides slide freely along the edge of the lower bars 42, 43, and when the bars 42, 43, are adjusted the corner guides slide along the edges of the bars 40, 41.

A rod 127 with squared end, extends transversely of the machine, is provided with right and left threads on which are nuts 129 projecting from the center board and back guides 47, and has a gear 128, that meshes with a gear 130 on rod 131 supported by the bars 40, 41. Keyed to the rod 131 is a gear 132 in mesh with a gear 133 on a rod 134 supported by the bar 41 and having right and left threads on which are nuts projecting from the backs of the center guides on the bar 41. When the rod 127 is turned the center guides 47 are drawn by the threads and nuts toward or from each other to adjust them to the widths of the back linings which are to be used by the machine in forming the cases.

The platform 79 over which the glued cloth is drawn by the slide 23, is borne by a column 135 held in the arms of a bracket 136 supported by the cross wall 45. A spring 137 normally holds this platform elevated, while a cam 138 on the shaft 10 by contact with the arm 139 projecting from the column, depresses it at the proper time. (Figs. 28 and 29.) After the second fold has taken place the platform with the completed case is lowered to a position slightly below the discharging slide 140 which then moves and pushes the case from the machine between the rollers 150. This discharging slide is a plate provided with nuts 141 that freely move on rods 142 secured transversely of the frame. To one of these nuts is connected a cord that passes over a train of pulleys 143, 144, 145, to a sheave 146 mounted upon a journal to which is secured a pinion 147. In mesh with this pinion is a segmental rack on a lever 148 that bears a roll in contact with a cam 149 on shaft 10. After a case is completed and the platform is below the discharging slide, the cam 149 oscillates the lever 148 so the rack rotates the pinion and drives the sheave causing the cord to pull the slide and push a case between the rollers 150. The slide then returns to its normal position and the platform rises to receive another cloth. (Figs. 28 and 29.) The upper of the rollers 150 is mounted in stationary bearings 151, while the lower is mounted in swinging bearings 152 that are held up by springs 153 so as to press the cases as they are discharged between the rolls with a yielding pressure. (Figs. 2 and 29.) Both shafts of these rollers

bear intermeshing gears 154 while the upper also bears a bevel gear 155 that meshes with a bevel gear 156 on a vertical shaft 157 that has a gear 158 in mesh with a gear 159 on the main driving shaft 30. (Fig. 2.)

The bars bearing the board and back lining holding guides and folding plates are adjustable for forming cases of the desired size and shape, by simply turning the adjusting screws. The cams on the cam shaft are so timed that the picker lifts from the elevator a pair of boards and a back lining while the glue mechanism glues the cloth and the slide draws it across the platform. The picker is then rotated and depressed, bringing the boards and back lining down upon the glued cloth and pressing them and the platform down between the bars 38, 39, when the first folding plates move and lay the cloth over the ends of the boards and back, and the creasers prepare the corners. The picker then descends further pressing the platform with the cloth, boards and back linings between the bars 42, 43, so the second folding plates may operate to fold the cloth over the side edges of the boards, and after the platform descends a little farther the discharging slide pushes the completed cases from the platform to the rollers between which the cases are pressed and hardened as they are discharged from the machine.

We claim as our invention—

1. In combination in a machine for forming book cases, a frame with a receptacle for boards and back linings, a picker for transferring the boards and back linings to the cloth, a slide for drawing the cloth into position to receive the boards and back linings, and reciprocating plates for folding the cloth over the boards and back linings, substantially as specified.

2. In combination in a machine for forming book cases, a frame with a receptacle for boards and back linings, a picker for transferring the boards and back linings to the cloth, glue mechanism for gluing the cloth, and reciprocating plates for folding the cloth over the boards and back linings, substantially as specified.

3. In combination in a machine for forming book cases, a frame with a receptacle for boards and back linings, a picker for transferring the boards and back linings to the cloth, a slide for drawing the cloth into position to receive the boards and back linings, glue mechanism for gluing the cloth, and reciprocating plates for folding the cloth over the boards and back linings, substantially as specified.

4. In combination in a machine for forming book cases, a frame with a receptacle for boards and back linings, a picker for transferring the boards and back linings to the cloth, a slide for drawing the cloth into position to receive the boards and back linings, reciprocating plates for folding the cloth over



cloth, bars movable toward and from each other bearing reciprocating plates for folding the cloth over the boards and back linings, and rollers for pressing the finished cases, substantially as specified.

19. In a machine for forming book cases, in combination with the operating mechanism, adjustable bars extending longitudinally of the machine on one plane and adjustable bars extending transversely on a different plane, each of said bars bearing movable folding plates, substantially as specified.

20. In combination in a machine for forming book cases, having a frame with a receptacle for boards and back linings, and a platform for supporting the cloth, a picker adapted to carry the boards and back linings from the receptacle to the platform, and mechanism for rotating the picker, substantially as specified.

21. In combination in a machine for forming book cases, having a frame with a receptacle for boards and back linings and a platform for supporting the cloth, a movable picker, mechanism for raising and lowering the picker, and mechanism for revolving the picker, substantially as specified.

22. In combination in a machine for forming book cases, having a frame with a receptacle for boards and back linings, and a platform for supporting the cloth, a movable picker, a cam and lever for raising and lowering the picker, and a cam, lever, rack and pinion for oscillating the picker, substantially as specified.

23. In combination in a machine for forming book cases, a receptacle having independently movable bottoms for holding boards and back linings of different thicknesses, a platform for the cloth, and a movable picker with mechanism for lowering and raising the picker above the receptacle, mechanism for rotating the picker and mechanism for lowering and raising the picker above the platform, whereby pieces varying in thickness may be placed in the receptacle and transferred to the platform substantially as specified.

24. In combination in a machine for forming book cases, a receptacle for the boards and back linings, having a bottom formed in two independent parts, adapted to be lifted by the same mechanism, and mechanism for lifting the independent parts together, substantially as specified.

25. In combination in a machine for forming book cases, a flooring for the back linings supported on a post held by a tube, a flooring on each side of the back lining flooring, supported by the tube, and a ratchet and pawl mechanism for lifting the tube and post, substantially as specified.

26. In a machine for forming book cases, in combination with the driving mechanism, a receptacle for boards and back linings, the bottom of said receptacle consisting of a flooring for the boards, on a movable support, an

elevating mechanism for elevating the support, and a flooring for the back linings on a movable support frictionally held by the support of the flooring for the boards, substantially as specified.

27. In combination in a machine for forming book cases, a frame with a receptacle for boards and back linings, a picker for transferring the boards to the cloth, a pump connected with the picker for lifting the back linings, a slide for drawing the cloth into position to receive the boards and back linings, and reciprocating plates for folding the cloth over the boards and backs, substantially as specified.

28. In combination in a machine for forming book cases, a frame with a receptacle for boards and back linings, a picker for transferring the boards to the cloth, a pump connected with the picker for lifting the back linings, glue mechanism for gluing the cloth, and reciprocating plates for folding the cloth over the boards and back linings, substantially as specified.

29. In combination in a machine for forming book cases, a frame with a receptacle for boards and back linings, a picker for transferring the boards to the cloth, a pump connected with the picker for lifting the back linings, reciprocating plates for folding the cloth over the boards and back linings, and a discharging slide for thrusting the cases from the machine, substantially as specified.

30. In combination in a machine for forming book cases, a frame with a receptacle for boards and back linings, a picker for transferring the boards to the cloth, a pump connected with the picker for lifting the back linings, reciprocating plates for folding the cloth over the boards and back linings, and rollers for pressing the finished cases, substantially as specified.

31. In combination in a machine for forming book cases, a receptacle for the boards and back linings having a bottom and adjustable guides which form the side walls of the receptacle, substantially as specified.

32. In combination in a machine for forming book cases, a receptacle for the boards and back linings, consisting of a frame of adjustable bars, bottoms for supporting the boards and back linings, and guides which form the side walls of the receptacle, substantially as specified.

33. In a machine for forming book cases, in combination, a pair of adjustable bars extending longitudinally of the machine, and two pairs of adjustable bars extending transversely of the machine, the longitudinal bars and one pair of the transverse bars bearing reciprocating folding plates, and the longitudinal bars and the other pair of transverse bars supporting the adjustable guides which form the side walls of the boards and back linings receptacle, substantially as specified.

34. In combination in a machine for forming book cases, a frame with a receptacle for



boards and back linings, a reciprocating platform for supporting the cloth, a picker for transferring the boards and back linings to the cloth, a slide for drawing the cloth to the platform, and reciprocating plates for folding the cloth over the boards and back linings, substantially as specified.

35. In combination in a machine for forming book cases, a frame with a receptacle for boards and back linings, a reciprocating platform for supporting the cloth, a picker for transferring the boards and back linings to the cloth, glue mechanism for gluing the cloth, and reciprocating plates for folding the cloth over the boards and back linings, substantially as specified.

36. In combination in a machine for forming book cases, a frame with a receptacle for boards and back linings, a reciprocating platform for supporting the cloth, a picker for transferring the boards and back linings to the cloth, reciprocating plates for folding the cloth over the boards and back linings, and a discharging slide for thrusting the cases from the machine, substantially as specified.

37. In combination in a machine for forming book cases, a frame with a receptacle for boards and back linings, a reciprocating platform for supporting the cloth, a picker for transferring the boards and back linings to the cloth, reciprocating plates for folding the cloth over the boards and back linings, and rollers for pressing the finished cases, substantially as specified.

38. In a machine for forming book cases, in combination, with a movable picker and mechanism for reciprocating and revolving the picker, a platform movable below the path of the picker, and a spring for elevating and cam for depressing the platform, substantially as specified.

39. In a machine for forming book cases, in combination with a pair of folding plates movable toward each other in one plane on one level, a pair of folding plates movable toward each other in one plane but on a different level and at right angles to the other pair of plates, a platform movable from the plane of the upper plates to a plane below the plane of the lower plates, substantially as specified.

40. A picker for a machine for forming book cases, having a portion of its face provided with pins and a portion with openings, a suction pump, and a pipe connecting the pump with the openings in the face of the picker, substantially as specified.

41. A slide for drawing the cloth in a machine for forming book cases, consisting of a plate, fingers fixed to the plate, sliding rod, complementary fingers attached to the rod, and arms projecting from the rod and rest-

ing upon a rod that is supported by the plate and has a limited movement independent thereof, the latter rod being connected with the plate reciprocating mechanism, substantially as specified.

42. A folder for folding the cloth over the boards and back lining in a book case machine, having a folding surface of a length equal to the width of the case to be formed, on one level, with the surfaces beyond on a lower level, for creasing the cloth at the corners, substantially as specified.

43. A folder for folding the cloth over the boards and back linings in a book case machine, having a folding surface, and creasers movable along said surface, substantially as specified.

44. In a machine for forming book cases, in combination with the operating mechanism, adjustable bars extending longitudinally and transversely of the machine, said bars bearing movable folding plates provided with creasers, substantially as specified.

45. In a machine for forming book cases, in combination with the operating mechanism, bars extending longitudinally of the machine on one plane, and bars extending transversely on a different plane, each of said bars bearing movable folding plates, with creasers supported by the lower bars and moved by the upper folders, substantially as specified.

46. In combination in a machine for forming book cases, a frame with a receptacle, movable guides for the boards and back linings in the receptacle, glue mechanism for gluing the cloth, a movable platform, a slide for drawing the cloth from the glue mechanism to the platform, a picker for transferring the boards and back linings to the cloth, a pump connected with the picker for lifting the back linings, adjustable bars extending longitudinally and transversely of the machine and supporting reciprocating folding plates, a discharge slide for thrusting out the cases, and rolls for pressing the cases as they leave the machine, substantially as specified.

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