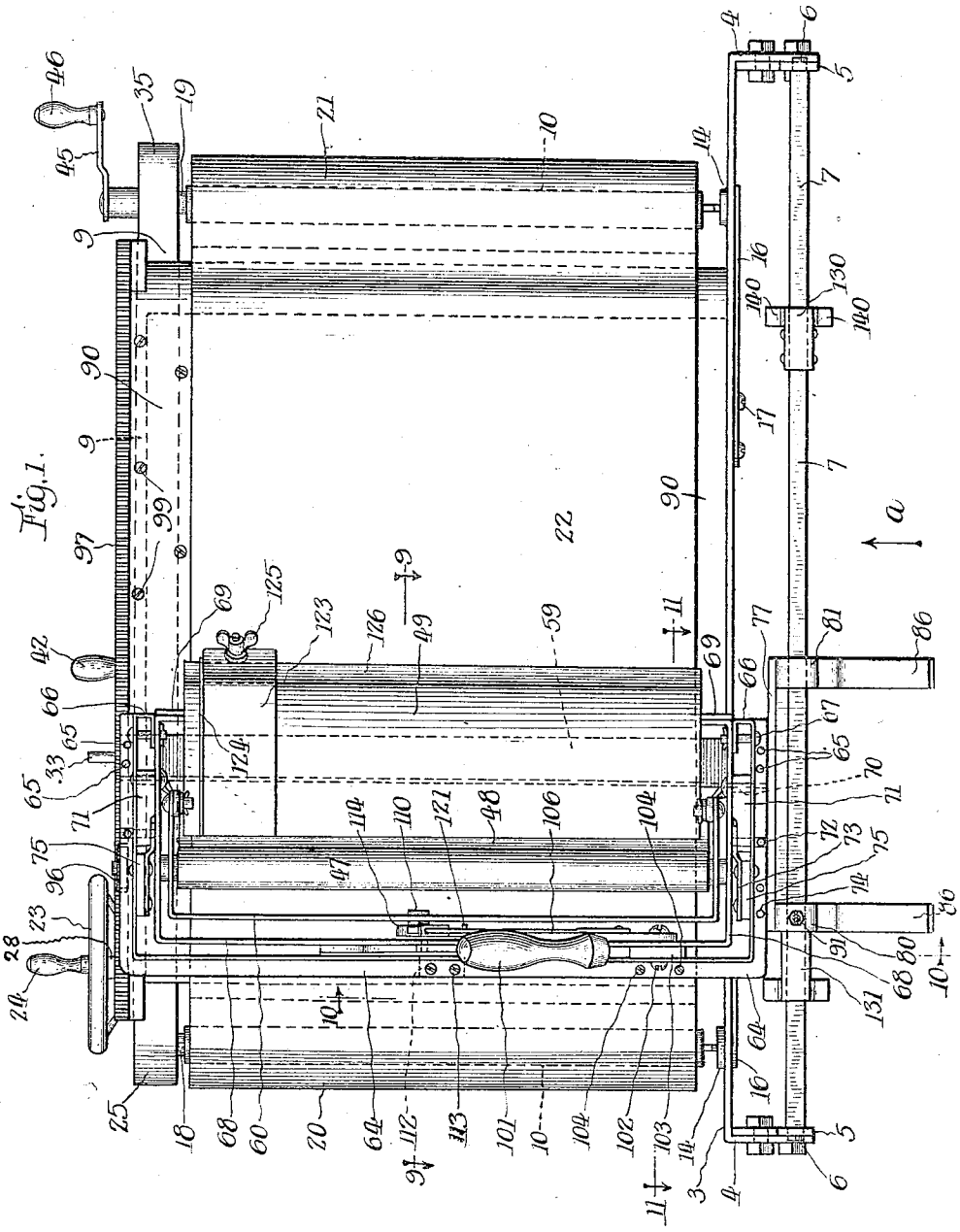
May 1, 1928. 1,667,917

W. E. WILLIAMS

MACHINE FOR COPYING BY THE HECTOGRAPH PRINCIPLE

Filed March 25, 1925 5 Sheets-Sheet 1

Fig. 1.



Witness:
A. J. Sauser

Inventor:
William Erastus Williams

May 1, 1928. 1,667,917

W. E. WILLIAMS

MACHINE FOR COPYING BY THE HECTOGRAPH PRINCIPLE

Filed March 25, 1925 5 Sheets-Sheet 2

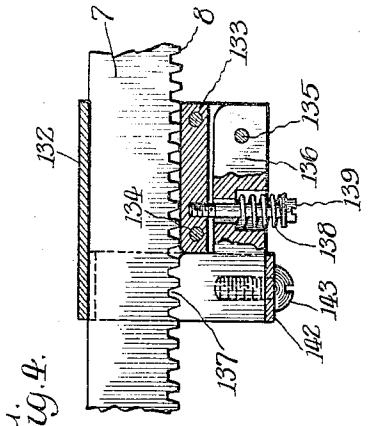


Fig. 4.

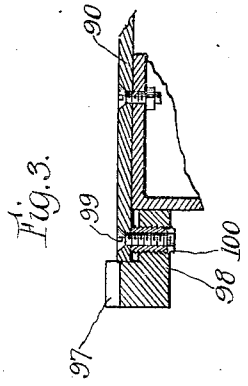


Fig. 3.

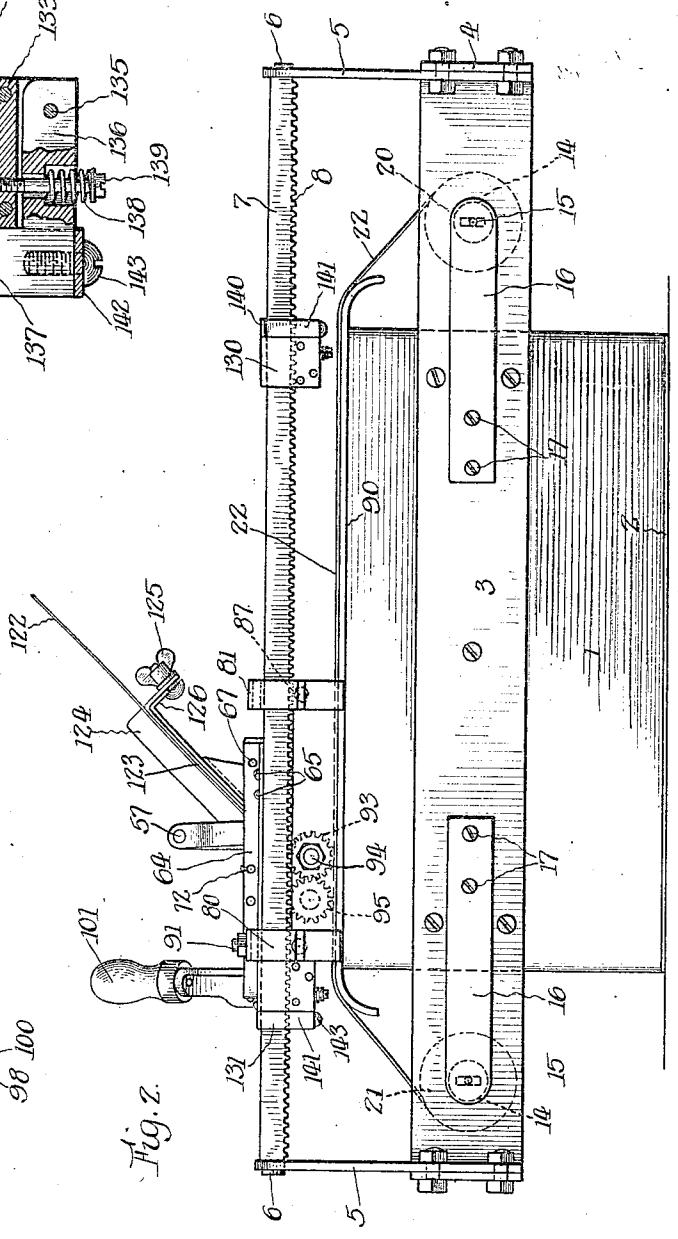


Fig. 2.

Witness:
A. J. Sauser.

Inventor:
William Erastus Williams

May 1, 1928. 1,667,917

W. E. WILLIAMS

MACHINE FOR COPYING BY THE HECTOGRAPH PRINCIPLE

Filed March 25, 1925 5 Sheets-Sheet 3

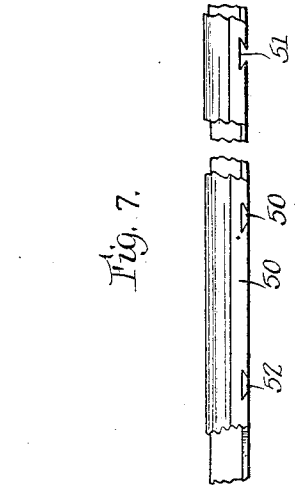


Fig. 7.

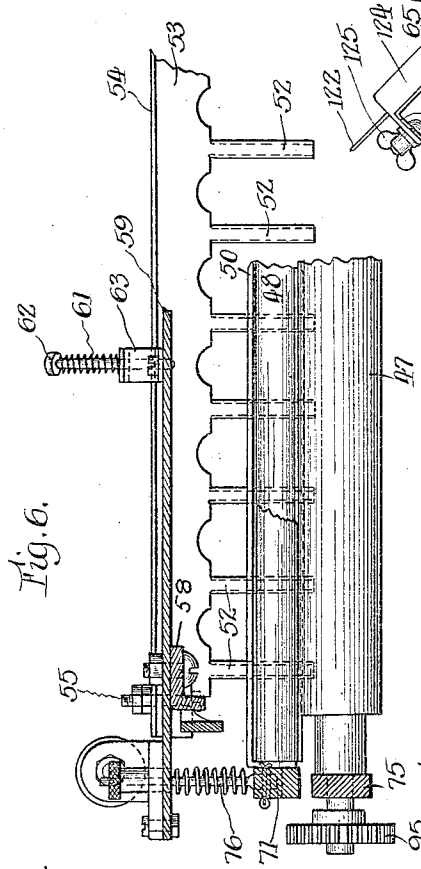


Fig. 6.

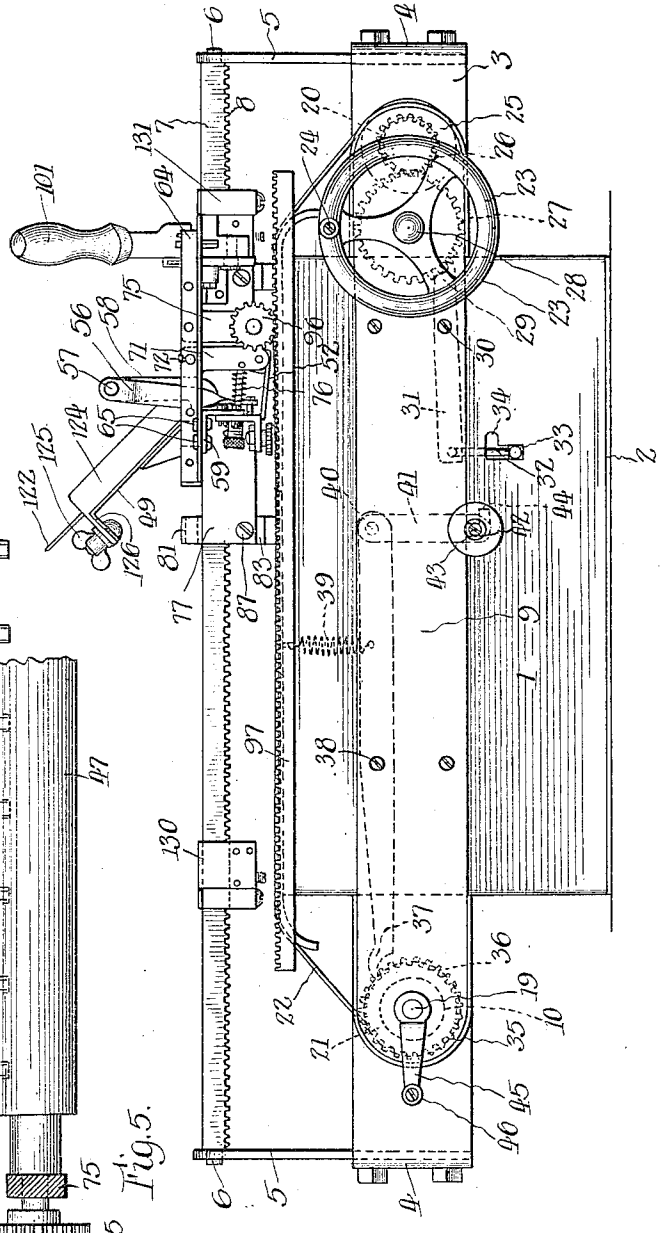


Fig. 5.

Witness:
O. J. Sauser.

Inventor:
William Edwards Williams

May 1, 1928. 1,667,917

W. E. WILLIAMS

MACHINE FOR COPYING BY THE HECTOGRAPH PRINCIPLE

Filed March 25, 1925 5 Sheets-Sheet 4

Fig. 8.

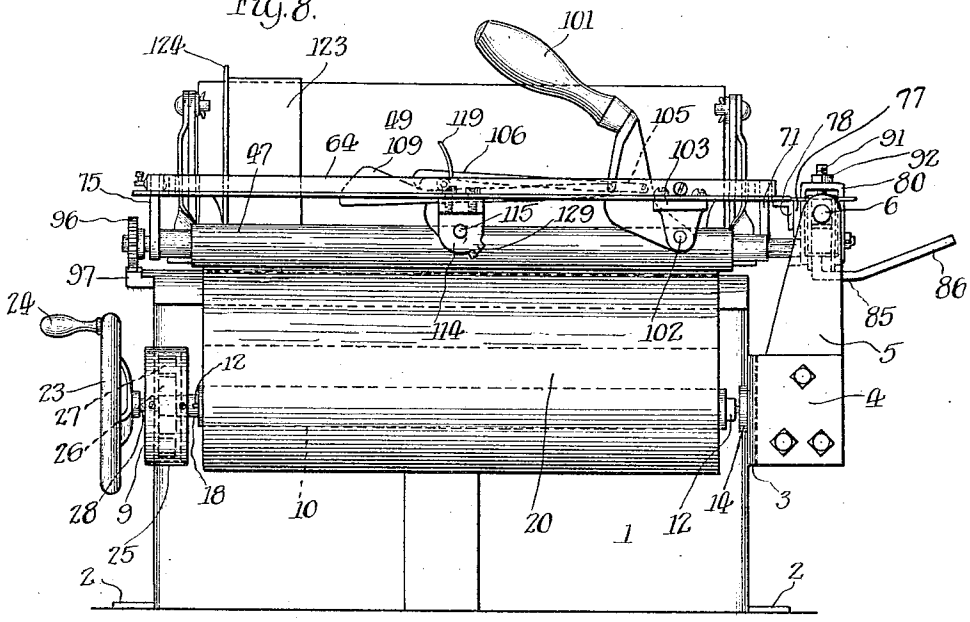
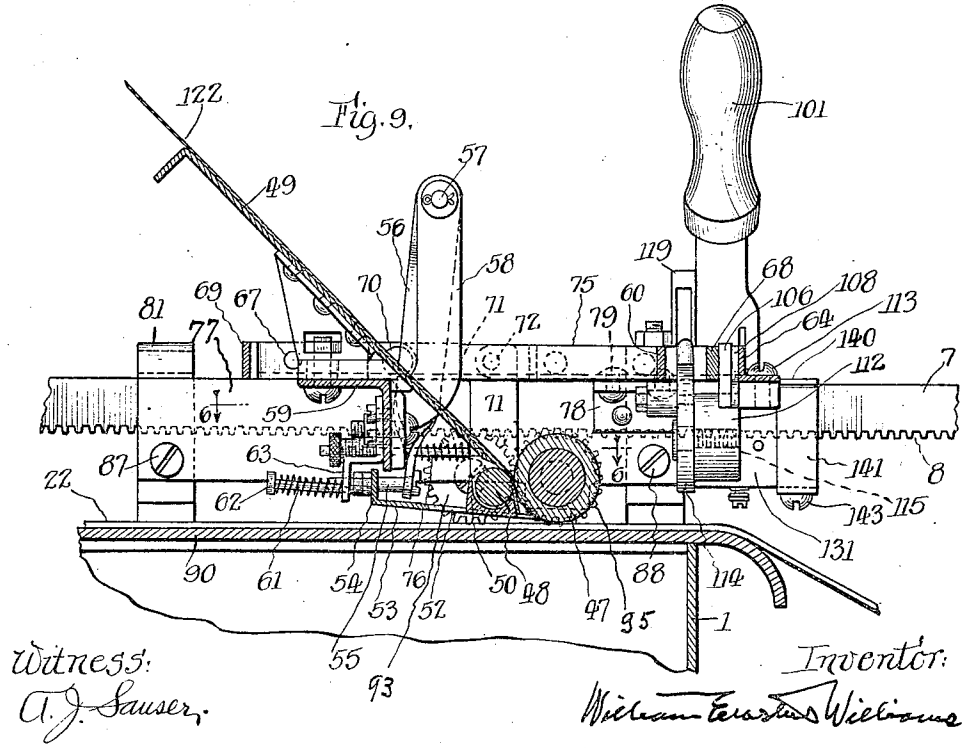


Fig. 9.



Witness:
A. J. Sauser.

Inventor:
William Erastus Williams

May 1, 1928. 1,667,917

W. E. WILLIAMS

MACHINE FOR COPYING BY THE HECTOGRAPH PRINCIPLE

Filed March 25, 1925 5 Sheets-Sheet 5

Fig. 10.

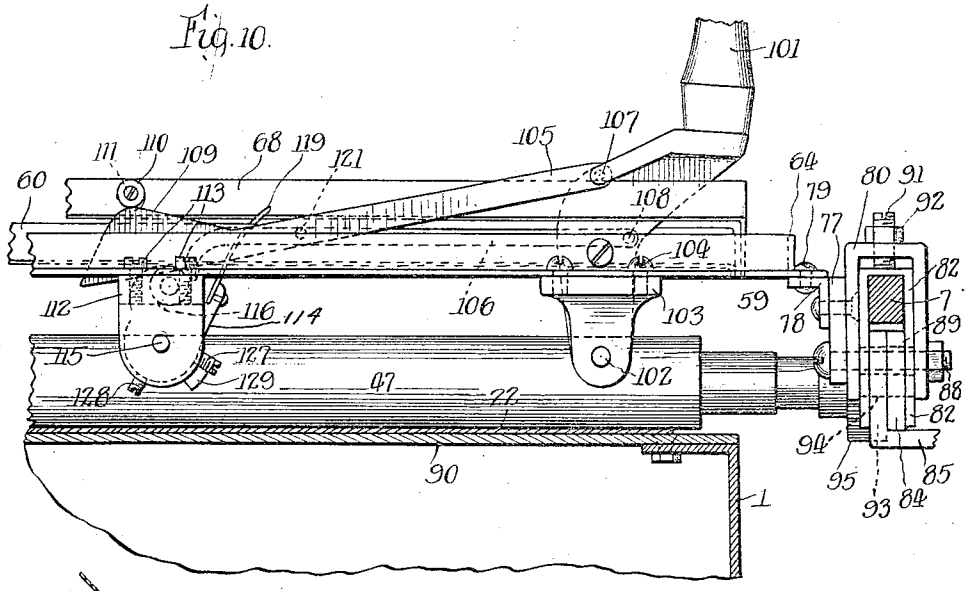


Fig. 11.

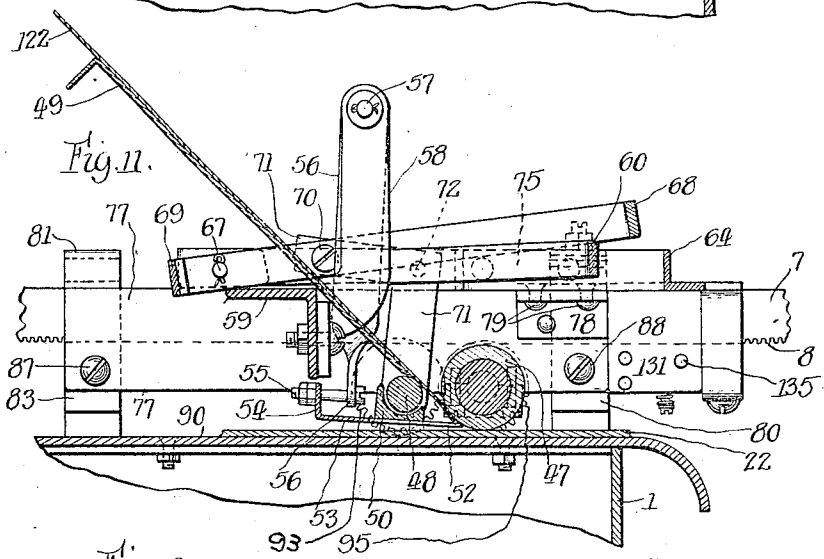


Fig. 12.

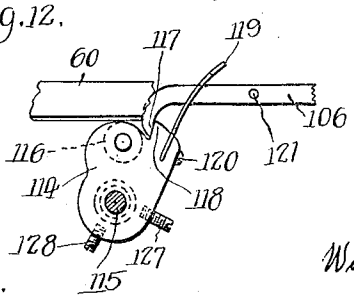
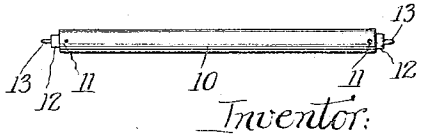


Fig. 13.



Witness:
A. J. Sauer.

Inventor:
William Erastus Williams

Patented May 1, 1928. 1,667,917

UNITED STATES PATENT OFFICE.

WILLIAM ERASTUS WILLIAMS, OF WILMETTE, ILLINOIS, ASSIGNOR TO DITTO, INCORPORATED, OF CHICAGO, ILLINOIS, A CORPORATION OF WEST VIRGINIA.

MACHINE FOR COPYING BY THE HECTOGRAPH PRINCIPLE.

Application filed March 25, 1925. Serial No. 18,326.

My invention relates to a machine that is used with a gelatin sheet or strip that is stretched across a bed and secured at each end onto spindles supported in the machine and means are provided for winding and unwinding the spindles and presenting a new surface on the gelatin sheet to the platen surface of the exposed gelatin sheet, and mechanism is provided for applying paper or cardboard to the gelatin sheet on the bed for taking impressions on the hectograph principle, the gelatin sheet itself being, as it were, the type bed, as is well known in this art.

The object of the invention is to produce a construction to enable an accurate register each time for the copy to be made with the imprint that is made on the gelatin roll sheet from the master copy as is well understood in hectograph work.

A further object of the invention is to provide a means of laying down the sheets onto the gelatin roll in accurate and exact registry and shape throughout the entire length of the copying surface or platen surface.

A further object of the invention is to provide a construction for registering the master copy and the copies to be taken therefrom at any desired point of registration on the bed or printing surface.

A further object of the invention is to provide a mechanism that will withdraw the paper sheets completely free from the gelatin roll as sheets are desired to be removed from the machine. Other special and detail objects will be hereinafter set forth.

Reference will be had to the accompanying drawings in which Fig. 1 is a plan view of the machine.

Fig. 2 is a side elevation of the machine looking from the direction of the arrow "*a*" in Fig. 1, being what is termed the right side of the machine, the operator always being at the left of both Figs. 1 and 2.

Fig. 3 is a detail of the fastening of one of the side racks being a cross sectional section of one corner of the bed and frame.

Fig. 4 is a sectional detail of one of the stops for the carriage.

Fig. 5 is a side elevation being the left side of the machine or the opposite side from that shown in Fig. 2.

Fig. 6 is a plan sectional detail showing the clamping roll and paper stops on line 6—6 of Fig. 9.

Fig. 7 is an elevational detail looking from the left of Fig. 9 showing the means of supporting the paper stop fingers.

Fig. 8 is a front elevation of the machine.

Fig. 9 is a transverse sectional elevation through the impression carriage on line 9—9 of Fig. 1.

Fig. 10 is a detail front elevational view on an enlarged scale of the operating lever and its links.

Fig. 11 is a transverse sectional view on line 11—11 of Fig. 1.

Fig. 12 is a detail in connection with the operating levers.

Fig. 13 shows one of the spindles upon which the gelatin rolls are mounted.

The machine is provided with a sort of a box-like sheet steel frame body indicated by 1 having foot flanges 2 on the sides thereof.

Onto the right side of this box frame 1 there is provided a longitudinal supporting bar 3 which extends beyond the box frame at each end and has its ends turned over into the angle projections 4 from which there extend upwards the posts 5, see Figs. 1 and 2.

Into the posts 5 there is mounted on trunnion ends 6 a rack bar 7 having rack teeth 8 on its underside. This rack bar 7 supports and guides the impression carriage for applying the paper to the gelatin roll sheet.

On the left side of the box frame of the machine, see Figs. 1 and 5, there is fixed a bar 9 of similar character to that of the bar 3 but not so long.

In the ends of the bars 3 and 9 I provide the bearings for carrying the spindles upon which the gelatin sheet is rolled. One of these spindles is shown in Fig. 13, as having a wooden body 10 into which iron gudgeons are secured by rivets 11, the gudgeons being provided with flat portions 12 and with round small trunnion ends 13, to hold the spindles central with the axis of rotation of the revolving means of the machine.

Mounted in the side bar 3 at the right I provide small blocks 14 having small perforations 15 adapted to support the trunnion ends 13 of the spindles.

The blocks 14 are secured to spring plates

16 secured by rivets or screws 17 to the side bar 3.

When the spindles are inserted in the machine the trunnion ends 13 of the gudgeons of the spindles are inserted in the holes 15 and pressure is applied to push the springs 16 outward to permit the entry of the other gudgeon end into a short supporting spindle shaft 18, see Fig. 8, at the front end of the machine and into a corresponding shaft slightly different in form indicated by 19, at the rear of the machine, both on the left side of the machine, see Figs. 1 and 5.

The shafts 18 and 19 are slotted in their ends to engage the flat portions 12 of the spindle gudgeons and engage, as it were, the roll spindles to be revolved with the shafts 18 and 19 or remain stationary whenever the latter are locked in fixed position as desired.

A gelatin sheet is shown in the machine in Figs. 1, 2, 5, 8 and 9 extending from the body of the roll at the outward end as indicated by 21 and on the inward side as indicated by 20 and the part of the sheet shown over the bed of the machine as 22 and the bed is indicated by 90.

A hand wheel 23 having a hand crank 24 is provided to rotate the shaft 18 and wind the gelatin sheet onto the spindle at the front end of the machine.

The shaft 18 is mounted inside of a housing 25, see Figs. 1, 5 and 8 at the left front of the machine on the end of the said bar 9 and has mounted thereon a little spur gear 26 which is engaged by a larger gear 27 on a secondary shaft 28 upon which the said hand wheel 23 is mounted and thus the hand wheel 23 drives the shaft 19 together with the spindle mounted therein.

A pawl 29 is hinged on a pin 30 and engages the teeth of the gear 28 and prevents a backward rotation of the gear and the front spindle when desired. This pawl 29 has a weighted end 31 which holds it normally in engagement with the teeth of the gear 27 and into this end there is fixed a latch lever 32 which has its end 33 extending outside of the frame 1 of the machine in easy reach of the operator who, when desired, may lift the end 33 and thus disengage the pawl 29 from the teeth of the gear 27.

The end 33 of the latch lever 32 extends through an aperture in the side of the box frame. This aperture is provided with a shoulder notch 34, see Fig. 5, which permits the pawl 29 to be held from engagement with the teeth of the gear 27.

At the rear or outer end of the machine the short shaft 19 which engages the end of the spindle to revolve the same or hold it in a fixed position is also held in a housing 35 in the end of the side bar 9 and upon this shaft there is provided the gear 36 which in turn is controlled in its movement in one direction by means of a pawl 37 hinged on a pin 38 in the side of the machine.

A spring 39 normally holds the pawl 37 in engagement with the teeth of the gear 36. The end of the pawl 37 extends toward the front of the machine and is connected by a hinge 40 with a link 41 to a handle 42 which extends outside of the frame in easy reach of the operator as may be seen by Fig. 1.

The shaft 43 of this handle 42 extends through an aperture in the side of the frame which has a retaining shoulder 44 which permits the operator to hold free of engagement the pawl 37 from the teeth of the gear wheel 36 as illustrated in Fig. 5.

A hand crank 45 with its handle 46 permits the operator to use the shaft 19 to rewind the roll onto the outer spindle when desired.

However, in the use of this machine the general practice is to put the loaded spindle onto the outer end of the machine into the end of the shaft 19 and into rear block 14, see Fig. 1, and then train the gelatin sheet 22 over the bed of the machine and rewind it onto the spindle at the front of the machine through the medium of the shaft 18 and the front block 14 and consecutively use the several portions 22 of the gelatin sheet by continually winding onto the front spindle until the rear spindle is exhausted and repeat the operation with a fresh roll placed at the outer end of the machine to be again rewound on the spindle at the front of the machine.

As before mentioned, the impression carriage is carried on the rack bar 7 in a manner that the impression carriage may be shoved backward and forward along this rack bar 7 and over the bed of the machine as desired.

The impression carriage has as its essential feature the impression roller 47 which is rubber faced and adapted to press down in contact with the gelatin sheet, the paper of the master copy and the paper of the copies desired to be made. This rubber faced roller 47 has co-acting with it a clamping roller 48 and the latter is adapted to be swung to and from the roller 47 in a manner to clamp the paper to be fed onto the gelatin sheet and release the same as desired in the operation of the machine.

The paper is directed into the embrace of the rubber roller 47 and the clamping roller 48 by means of the guide plate 49, see Figs. 9 and 11, which guide plate is fixed in the frame of the impression carriage.

Mounted underneath the roller 48 and carried by the same supporting arms which support the roller 48 with the frame of the impression carriage, there is a peculiarly shaped bar 50 which hangs, as it were, directly underneath the roller 48.

This bar 50 is provided with dove-tailed slots 51 best observed in Fig. 7, which serve as guides for the stop fingers 52 which are extensions of an angle plate 53 having the vertical flange 54 and this flange 54 is connected by studs 55 with the lever arms 56 which are mounted at 57 to vertical post pieces 58 connected to the main cross girder angle bar 59, of the frame of the impression carriage. The lever arms 56 are secured to and are a part of a bail member 60 through the medium of which the two lever arms 56 at each end of the impression carriage are made to move simultaneously as desired through the medium of a cam movement shown in detail in Fig. 12.

The stop fingers 52 abut against the rubber faced roller 47 and thus furnish a stop for the paper 122 when the same is inserted along the paper guide plate 49. At the proper time when it is desired to release the fingers 52 from the contact with the roller 47 and withdraw them for clearance for the paper to travel down between the rollers 47 and 48 after the roller 48 has clamped the paper to the roller 47, springs 61 mounted on studs 62 secured to the angle 54 of the plate 53 withdraw the plate 53 and its stop fingers 52 from the roller 47. The springs 61 act against little brackets 63 secured to the impression frame carriage angle bar 59, see Figs. 6 and 9.

The impression carriage frame is composed of the cross angle bar 59 above mentioned, supplemented by a yoke piece 64 angle in shape connected by rivets 65, to the angle bar 59, see Fig. 1.

The inner ends of this yoke piece 64 are turned around as indicated by 66 for the purpose of carrying the hinge pins 67 upon which is mounted a bail member 68 in the form of a rectangle having a rear cross member 69, see Figs. 1, 9 and 11.

The sole purpose of this bail member 68 is to actuate the roller 48 to and from the rubber faced roller 47 and this is brought about by means of hinge pins 70 hinged in the bail 68 and secured into angular or bell crank blocks 71 which are hinged at 72 into the aforementioned angle yoke piece 64.

In these bell crank blocks 71 the trunnions of the clamping roller 48 are journaled and from these trunnions the guide bar 50 is carried by suitable bearings at the ends of the bar 50.

Thus the raising and lowering of the side of the bail 68 that is adjacent to the operating handle the roller 48 is moved toward and away from the roller 47 and clamping and releasing the paper between said rollers.

The roller 48 is held normally in contact with roller 47 by springs 76 working against the blocks 71 and the vertical leg of angle frame piece 59.

In order to better sustain the bell crank blocks 71 there is provided a double bearing for its hinge pin 72 in the form of keeper pieces 73 secured by rivets 74 to blocks 75 to the yoke piece 64, see Fig. 1.

The block 75 at the left of Fig. 1 extends downward and furnishes the bearing for the rubber faced roller 47 at the left end of the roller, see Figs. 1 and 5, while the block 75 at the right is simply a filler block, the bearing for the roller 47 at this point being made in the bar 77, see Figs. 9 and 11.

The angle frame piece 59 which extends across the impression carriage is welded to or made an integral part of the longitudinal bar 77 and the bail 64 is not only connected to the angle frame piece 59 by the rivets 65, see Fig. 1, but is also connected directly to the bar 77 by means of the angle block 78 and rivets 79, see Fig. 10.

To this bar 77 there is also welded or cast integrally therewith, if the frame is made of a casting, some keeper clevises 80 and 81; 80 being the front one and 81 the rear clevis.

These are simply U-shaped pieces which extend over and around the rack bar 7 outside of some clevis pieces 82 and 83 which are embraced by pieces 80 and 81 in a manner that they do not appear as separate pieces in the plan and side elevations, but are shown in end sections in Fig. 10.

The pieces 82 and 83 are clevises which embrace in a sliding fit the bar 7 and extend down and are fixed by welding to a longitudinal bar 84 and interposed between the bar 84 and the left leg of the clevises 82, see Fig. 10, there are blocks 85 which have outer end extensions 86 adapted to hold the impression carriage in a vertical position when the same is rocked around the trunnions of the bar 7, the outer extensions 86 coming against the sides of the frame when the impression carriage is rotated to a vertical position around the trunnions 6 of the bar 7.

The bar 84, clevis pieces 82 and 83, and the blocks 85 are joined together as a unitary piece adapted to slide freely over the bar 7 with as little slack movement as will permit the free sliding backward and forward along the bar 7.

The clevis pieces 80 and 81 embrace the clevis pieces 82 and 83 in a sliding fit, and at the left of Fig. 11 the clevis piece 81 and bar 77 are hinged to the clevis piece 83 and bar 84 by a hinge pin bolt 87.

A similar bolt 88 passes through the bar 77 and clevis pieces 80 and 82 and bar 84 at the front, the difference being that the hinge pin 87 is a regular hinge pin allowing only a hinging action while the bolt 88 is more of a clamping bolt since the hole through the clevis piece 82, block 85 and bar 84 is larger than the bolt 88 as indicated by the dotted lines 89, Fig. 10. This permits

the bar 77 with its clevises to be rotated slightly about the bar 84 raising and lowering the clevis 80 slightly in relation to the clevis 82 providing an adjustment for the front or near end or the right end of the bar 77, see Fig. 11, in relation to the bar 84.

This adjustment is provided in order to raise and lower the impression roller 47 as relates to the rack bar 7 and the bed of the machine since the clevises 82 and 83 which carry the bar 84 always travel in parallel relationship with the bar 7.

This slight adjustment is necessary in order to fit the roller 47 in proper contact with the gelatin sheet 22 on the bed 90 of the machine.

The screw 91 having a jam nut 92, see Fig. 10, regulates the amount of this adjustment in a downward direction while the limit of the excess size of the aperture 89 in the bar 84 and its connected parts over the size of the pin bolt 88 regulates the upward lift of the relationship of the inner end of the two bars 77 and 84.

The purpose of this adjustment in addition to that of accommodating a thickness of paper on the gelatin roll portion 22 on the bed 90 is to provide the means of the positive drive of the roll 47 from the rack teeth 8 of the bar 7 through the medium of a gear wheel 93 which engages the teeth 8 of the rack bar 7 and is carried on a trunnion pin 94 secured into the bar 84, see Fig. 2. The gear wheel 93 engages only a part of the width of the face of the rack teeth 8 and extends inward to cover over the face of the gear teeth of the gear 95 upon the shaft of the roller 47.

Thus as the impression carriage is moved backward and forward along the bar 7 through the medium of the embrace of the clevis pieces 80, 81, 82 and 83 the gear 93 is made to rotate in one direction and it in turn rotates the gear 95 in another direction which causes the roll 47 to revolve over the bed 90 and gelatin sheet 22 of the machine in the same manner that the roll might revolve with its own freedom, the pitch diameter of the gears 93 and 95 being exactly the diameter of the roll 47, so that the amount of travel along the rack bar 7 is exactly equal to the amount of travel that the roll 47 makes in moving over the bed of the machine.

The movement of the frame piece 77 which carries the roller 47 about the pin 87 as a center is so slight as to not materially change the pitch diameter associations of the gear wheels 93 and 95 as to interfere with the proper functioning of these gears.

The distance between the clevis pieces 80 and 81, 82 and 83 along the bar 7 is so short and the relative parts of the impression carriage so light that slight variations in the fit or the spring of the parts will vary the outer end or the left end of the roll 47, as shown in Fig. 1, being the left side of the machine. This left end may move or be sprung a little out of the true square in its travel over the bed of the machine, since the length across the machine is considerably greater than the distance between the clevis pieces on the bar 7.

To assist in always keeping the roll 47 square with the table in all of its movements I provide on the outer end of the roll 47 a gear 96, see Figs. 1, 5 and 8, of the exact diameter of the gears 93 and 95 and on this side of the machine there is provided a supplementary rack 97 secured to the bed 90 of the machine by a projection 98 of the rack extending under the edge of the bed 90, see Fig. 3, and secured thereto by flat head screws 99.

To provide an exact adjustment of the pitch line of the gear teeth of the rack 97 with the gear 96 I provide secondary screw blocks 100 secured into the projection 98 of the rack 97 and abutting up against the underside of the bed 90.

Into these screw blocks 100 the screws 99 are set so that by the adjustment upward or downward of the blocks 100, the screws 99 may be made to raise and lower the rack 97 in relation to the bed 90 of the machine, thus to accommodate the riding of the roll 47 on the gelatin sheet 22 at the desired elevation.

The raising and lowering of the bails 60 and 68 in the operation of the machine is brought about by the operating handle 101 hinged at 102 to a block 103 secured to the bail frame piece 64 by the screws 104, see Fig. 10.

This operating handle 101 is not only used to raise and lower the bail pieces as described, but is used by the operator in moving backward and forward the impression carriage over the bed and along the bar 7.

In this respect to moving the carriage back and forth the operating handle 101 is simply a fixed member by which to move the carriage but in the raising and lowering of the handle about its hinged axis 102 brings about the movement of the bails upward and downward through the medium of the links 105 and 106; the former being hinged at 107 and the latter at 108 to this operating handle.

The link 105 is provided with a cam surface 109, see Fig. 10, which operates against the roll 110 on a pin 111 in the bail 68 and the lower side of the cam end of the link 105 rests against a block 112 secured by screws 113 to the bail frame piece 64.

Thus in the movement of the handle 101 to the right or left in Fig. 10, the bail 68 is raised and lowered at the front edge which

on the raising releases the roller 48 from the roller 47 and on the lowering allows the springs 76 to push the roller 48 in contact with the roll 47.

As relates to the raising and lowering of the bail 60 at this front member by means of the link 106, this is brought about by a cam block 114, hinged at 115, see Figs. 10 and 12, to the aforementioned block 112 and carrying the roller 116 which operates directly in contact with the bail member 60.

The end of the link 106 terminates in a hook 117 which engages a tooth 118 on the block 114 and as the link 106 is pulled to the right it oscillates the block 114. This end of the link 106 passes through a slot in a strip 119 secured by screws 120 in the block 114 as shown in Fig. 12.

A pin 121 in the link 106 is adapted to engage the strip 119 on a movement to the left of the link 106 as the same moves free of the tooth 118 the function being that on the movement of the handle 101 from the position shown in Figs. 8 and 9 to the position of Fig. 10 the bail 60 is moved to bring the stop fingers 52 in contact with the roll 47 and simultaneously therewith and move the bail 68 to carry back the roll 48 free from the roll 47 in the position to receive the paper 122 which position is shown by Fig. 11.

Upon the entry of the paper 122 against the stop fingers 52 and in contact with the roll 47 the movement of the handle 101 to the left in Fig. 10 first causes the bail 68 to permit the springs 76 to move the roll 48 to contact with the roll 47, the cam surface 109 releasing the roll 110 of the bail 68 to allow the roll 110 to move downward as indicated in Fig. 10.

Meantime the cam block 114 remains as it were, momentarily at rest while the end 117 of the link 106, see Fig. 12, moves to the left free of the tooth 118 the latter remaining stationary until the pin 121 on the link 106 comes in contact with the piece 119 which then moves the block 114 carrying its roller 116 to the left and the motion is completed by the springs 61 best seen in Figs. 6 and 9.

The position of the roll 116, see Fig. 12, when the handle 101 is open as indicated in Fig. 10 is that of a stable position adapted to remain at rest until on return movement the pin 121 moves over to the left to engage the piece 119. The purpose of this rest is to allow the stop fingers 52 to hold the paper inserted in between the rollers 47 and 48 until such time as the roller 48 shall clamp the paper against the roller 47 and then there will take place a sudden release of the fingers 52 to be retraced by the springs 61 and make a quick withdrawal of the stop fingers 52 permitting the carriage then to move forward and feed the paper down between the rollers 47 and 48 onto the gelatin sheet 22 as the carriage is moved forward by the operator through the handle 101.

The cam block 114 is limited in the extremes of its movement by the pins 127 and 128 engaging a projection 129, Fig. 10, fixed to the block 112 thus the cam block 114 is rotated only through the segment between the pins 127 and 128.

On the completion of the printing operation on the withdrawal of the carriage back to the place of commencement of the operation the moving of the handle 101 to the position of Fig. 10 from that of Fig. 8 which releases the paper for withdrawal slightly before the stop fingers 52 come in contact with the roll 47, the paper having been withdrawn at this time substantially to the same place as when originally inserted.

A side register or guide for the paper is provided in the form of an adjustable plate 123 having a side flange 124 secured in position across the paper guide 49 by a clamping nut 125 which clamps a stiffening flange 126 of the paper guide 49, see Figs. 1, 2 and 5.

The impression carriage is limited in its movement along the bar 7 and over the bed of the machine by means of the stop block 130 at the rear of the machine and a similar block 131 at the front of the machine.

These stop blocks are alike save only they are reversed as to the position of their contact ends.

The purpose of these blocks is to register the movement of the impression carriage at both ends of its stroke in any position desired on the bed of the machine.

The detail construction of these stop blocks is best understood from Figs. 2 and 4.

The block is composed of a clevis piece 132 which extends over and embraces the bar 7 and the wings of this clevis piece are separated by a filler block 133 connected across to the wings of the clevis piece 132 by the rivets 134 thus the clevis 132 with its block 133 becomes a sliding member on the bar 7 and is entered on the bar by sliding on from the end of the bar.

The clevis piece 132 has its side members extending downward and carrying a hinge pin 135 on which is hinged a pawl block 136 which block is provided with teeth 137 which engage the rack teeth 8 of the bar 7.

The teeth 137 are held in engagement with the rack teeth by means of a spring 138 threaded onto a screw 139 screwed into the block 133 and thus normally the teeth 137 always hold the block stationary on the bar 7, until the teeth 137 are released.

For convenience of releasing and moving the blocks there is provided the contact wings 140, one on each side adapted to be pressed down by the fingers and thus release the teeth 137 from the teeth 8. These

wing pieces 140 are the ends of a U-shaped piece which embraces the outside from the bottom of the clevis indicated by 141 and extend across as shown by 142, Fig. 4, and are secured by the screw 143 to the block 136.

Thus by pushing down on the two wings 140 or either one of them alone there is pushed down the block 136 with its teeth 137 around the hinge pin 135 compressing the spring 138 and thus allowing the block in total to be shoved backward and forward along the bar 7 as desired for any given adjustment of the movement of the impression carriage across the bed of the machine.

The applicant has disclosed novel features in this application which are also disclosed in his co-pending applications Ser. Nos. 26,777; 54,750; and 108,058; and expressly reserves the right to claim any novelty not covered by the claims of this application as allowed in another co-pending application.

What I claim is:

1. In a machine of the class described, an impression carriage provided with an impression roll adapted to press a sheet of paper in contact with a gelatinized surface as the roll is moved in relation to the said surface, a clamping roll also mounted in the said carriage and adapted to clamp paper to the said impression roll, a series of stop fingers adapted to register in contact with the said impression roll and furnishing a registering end for paper that is fed to the impression roll and means for moving the said stop fingers to and from the said impression roll and for moving the said clamping roll to and from the said impression roll by a transverse movement of a carriage operating handle.

2. In a machine of the class described, an impression roll mounted in a carriage and adapted to be moved over a gelatinized surface, a clamping roll located in the front or the path of the travel of the said impression roll and adapted to be swung to and from the said impression roll in the form of clamping the paper, a stop for the paper abutting against the said impression roll and located underneath the said clamping roll and means for moving the said stop to and from the said impression roll, said means including a transversely movable carriage operating handle.

3. In a machine of the class described, a bed, a gelatinized sheet upon the said bed, an impression roll adapted to hold a sheet of paper in contact with the said gelatinized sheet, a registering stop adapted to abut against the said impression roll on the side thereof in which the paper is applied by the operator a clamping means located above the said stop and adapted to clamp the paper to the said impression roll and means for moving the said stop to and from the said impression roll controlled by a transversely movable operating handle.

4. In a machine of the class described, an impression carriage provided with an impression roll adapted to be rolled over a gelatinized surface, a clamping roll adapted to hold paper to the said impression roll, a stop for registering the paper in relation to a position on the impression roll just above the gelatinized sheet and underneath the said clamping roll, a transversely movable operating handle, a cam movement controlled by transverse movements of said handle adapted to regulate the movement of the said stop to and from the said impression roll in a manner that as the clamping roll is released from the impression roll the stop is made to engage the impression roll and remain there until the clamping roll again comes in contact with the impression roll, whereupon the stop is released thus producing a register of the paper in relation to the travel of the impression roll onto the gelatinized sheet.

5. In a machine of the class described, an impression carriage adapted to carry and move an impression roll over a gelatinized surface and place in contact with and remove a sheet of paper from the said gelatinized surface, a stop for registering the placement of the paper in relation to a position on the said impression roll, a clamping roll adapted to clamp the paper to the impression roll, means for moving the said stop to and from the said impression roll and means for moving the said clamping roll to and from the said impression roll and both of the said moving means connected to be operated by an operating handle secured to the frame of the carriage and connected to be moved transversely for operating the said parts by cam movements.

6. In a machine of the class described, a rack bar mounted on one side of the machine on end trunnions adapted to be rotated thereon, an impression carriage connected to slide along the said bar and be supported thereby in a movement in a rotary direction around the axis of the said rack bar, gearing carried by the said impression carriage and adapted to engage the gear teeth of the said rack bar and drive an impression roller carried by the said impression carriage; in combination with a secondary rack bar on the other side of the machine and parallel with the said first mentioned rack bar and with a gear on the other end of the said impression roll adapted to engage the said secondary rack bar in a manner that both ends of the said impression roll will travel parallel and square with the surface to be imprinted by the machine as relates to the edges thereof.

7. In a machine of the class described, a rack mounted along the side of the machine,

an impression carriage mounted to engage the said rack in sliding arrangement, a gear mounted to travel positively in the true pitch association with the rack teeth of the said rack, an impression roll carried by the said impression carriage and provided on the shaft of the said roll with a gear adapted to engage the aforementioned gear, and means for holding the said gears in driving relationship to each other by hinge connection of the frame parts whereby the said impression carriage member may have a slight vertical movement without distributing the gear connections with the teeth of the said rack bar.

8. In a machine of the class described, a rack bar revolubly mounted alongside of the machine, an impression carriage provided with slide members adapted to engage the said rack bar and slide thereon as the impression carriage is rolled over the bed of the machine, the said impression carriage and said rack bar adapted to be rotated to a reversed position about the axis of the rack bar.

9. In a machine of the class described, a bed, a gelatinized sheet, lying on the said bed, an impression carriage adapted to be moved over the said bed, a frame for the said impression carriage adapted to carry the said impression roller, and a clamping roller and a bail member of the said frame adapted to move the said clamping roll in relation to the said impression roller, an operating handle hinged to swing in a plane transversely to the movement of the carriage and adapted to move the said clamping roller.

10. In a machine of the class described, an impression carriage having an operating handle substantially rigid in the direction of the normal travel of said carriage and pivoted for transverse movement, a clamping roll, a stop for controlling the feeding of sheets, having a plurality of parallel fingers, a suitable guide for said fingers, and means for operatively connecting said handle to said clamping roll and stop.

11. In a device of the class described, a movable carriage, an impression roll revolubly mounted in said carriage, a registering paper stop, means for moving said stop into contact with said impression roll and clamping means located above said stop adapted for pressing a sheet of paper against said impression roll.

12. In a device of the class described, a movable carriage having mounted thereon a revoluble impression roll, a registering stop for sheets of paper, means for moving said stop into contact with said impression roll, means for suddenly retracting said stop, and clamping means located above said stop for pressing a sheet of paper against said impression roll.

13. In a machine of the class described, the combination with an impression roller normally rolling in contact with a gelatin surface, of a stop lying in the path of travel of said impression roller and mounted to be moved into contact therewith for registering sheets of paper, and a clamping roller mounted to be moved with respect to said impression roller and in all positions lying above said stop, said clamping roller and stop co-acting to insure the registration of paper in a given position above and free from contact with the gelatinized surface, the travel of the impression roller over the gelatinized surface pressing a sheet of paper into contact with said surface.

14. In a machine of the class described, a bed, a gelatin pad sheet trained over the bed, an impression carriage adapted to be moved over the bed, an impression roller carried by the carriage and adapted to impress paper on the gelatin pad sheet on the bed, a rack on one side of said bed adapted to be rotated on trunnions, bearings for said impression carriage sliding on said rack, a gear carried in the carriage and engaging said rack and also engaging a gear mounted on the shaft of said impression roller, a secondary rack mounted on the opposite side of the machine and fixed thereto, a gear mounted on said impression roller for engagement with the secondary rack, said carriage being adapted for partial rotation about said trunnions as an axis.

15. In a machine of the class described, an impression bed, an impression carriage adapted to be rolled over said bed, an impression roller carried by the carriage, a clamping roller mounted in front of the impression roller and adapted to be swung to and from said impression roller in clamping paper thereto, a bar extending across underneath the clamping roller and serving as a guide for stop fingers, stop fingers supported by said bar and means for moving the stop fingers to and from contact with said impression roller for registering sheets of paper.

16. In a machine of the class described, an impression bed, an impression carriage adapted to travel over the bed and be made to keep in accurate alignment by suitable racks and gears, a clamping roller located in front of said impression roller adapted for clamping paper to the impression roller, a paper stop located underneath the clamping roller and in forward position thereof and adapted to move to and from contact with said impression roller and form a stop for a sheet of paper, means for moving the clamping roller to clamp the paper against the impression roller when the latter is in position for operation in contact with the gelatin, and means for releasing the paper stop after the paper is clamped against the impression roller.

17. In a machine of the class described, an impression bed, an impression carriage adapted to be moved over the bed, an impression roller carried by the carriage, a clamping roller for clamping paper against the impression roller, paper stop fingers, a bar supported underneath the clamping roller having guideways for the paper stop fingers, cam means for moving the stop fingers into contact with the impression roller and spring means for retracting said fingers.

18. In a machine of the class described, an impression bed, an impression carriage adapted to move over the bed, an impression roller carried by the carriage and normally in contact with the impression bed, means for registering a sheet of paper to the impression roll and means for clamping the paper thereto when the impression roll is in contact with the impression bed.

19. In a machine of the class described, an impression bed, an impression carriage adapted to be moved over the bed, an impression roller carried by the carriage and normally in contact with the impression bed, means for registering a sheet of paper to the impression roller and means for clamping the paper thereto when said impression roller is in contact with the impression bed, and means for positively driving the impression roller as it is rolled over the bed.

20. In a machine of the class described, an impression bed, an impression carriage mounted to travel over the bed, an impression roller carried by the carriage and adapted to be swung clear of the bed for the admission of a fresh gelatin sheet, means for registering a sheet of paper in relation to the impression roller using the impression roller as a part of a paper stop, means for clamping the paper to the impression roller when an end of the paper is held out of contact with the impression bed, the paper and impression surface being in contact only as the impression roller is revolved from the initial position of registration downwardly into contact with the bed.

Signed at Chicago, in the county of Cook and State of Illinois, this 24th day of March, 1925.

WILLIAM ERASTUS WILLIAMS.