

(No Model.)

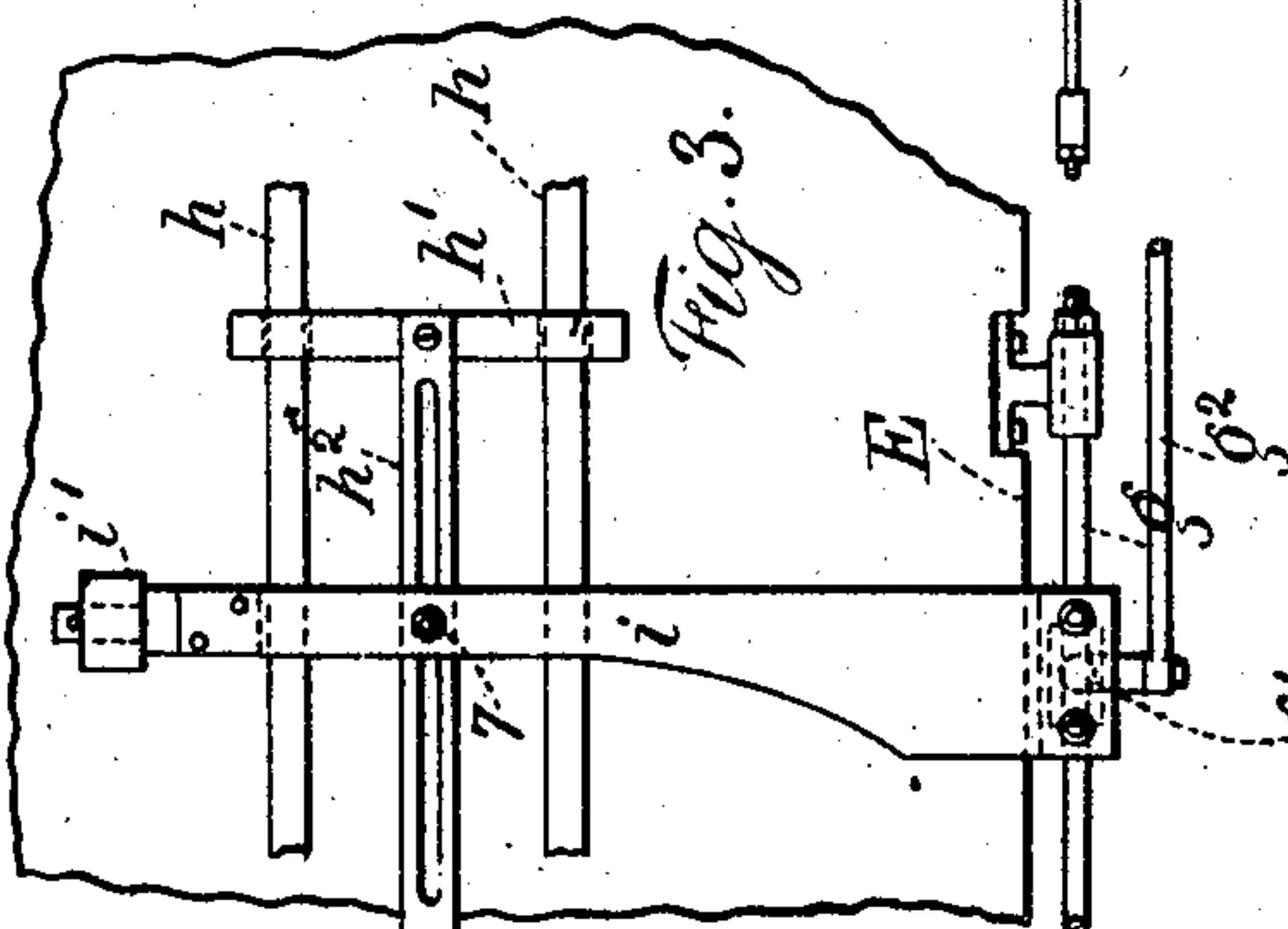
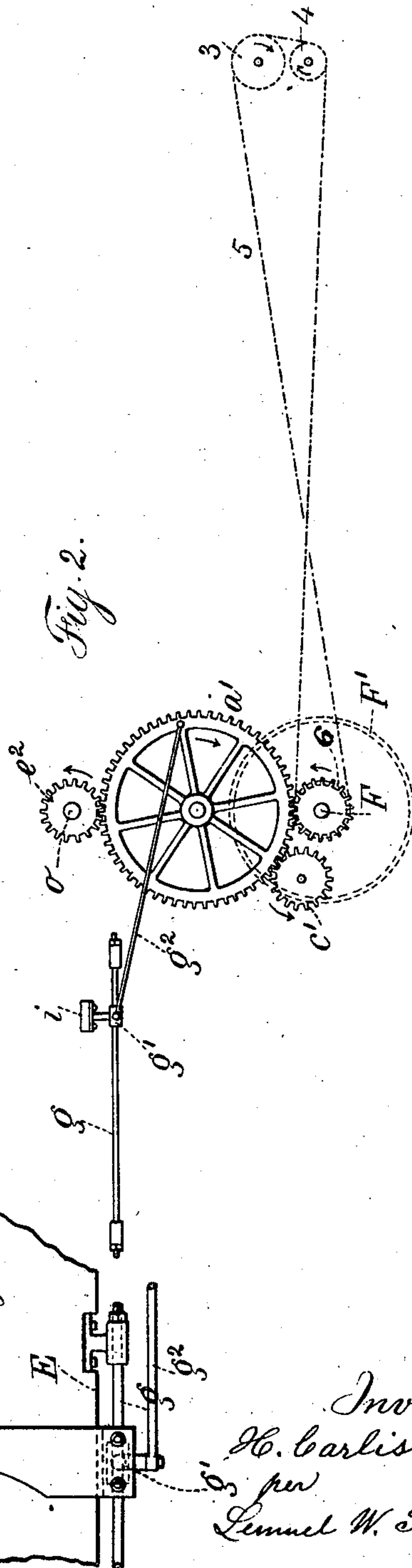
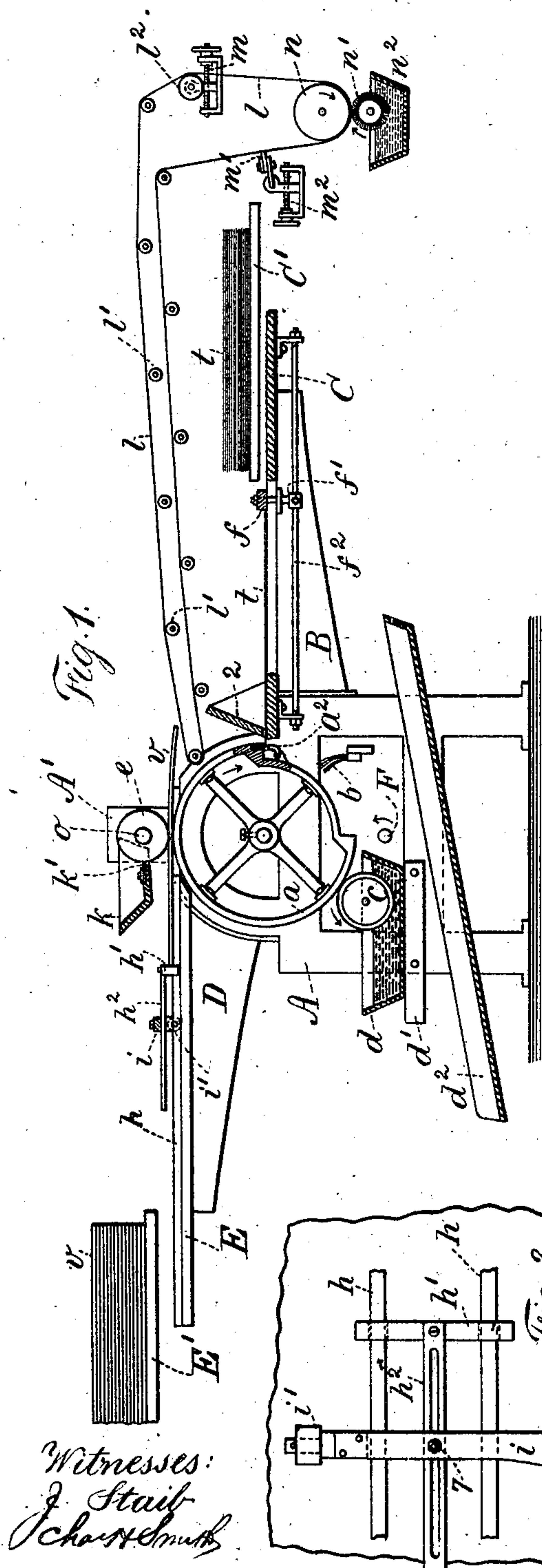
2 Sheets—Sheet 1.

H. CARLISLE.

MACHINE FOR PASTING AND MOUNTING SHEETS.

No. 546,506.

Patented Sept. 17, 1895.



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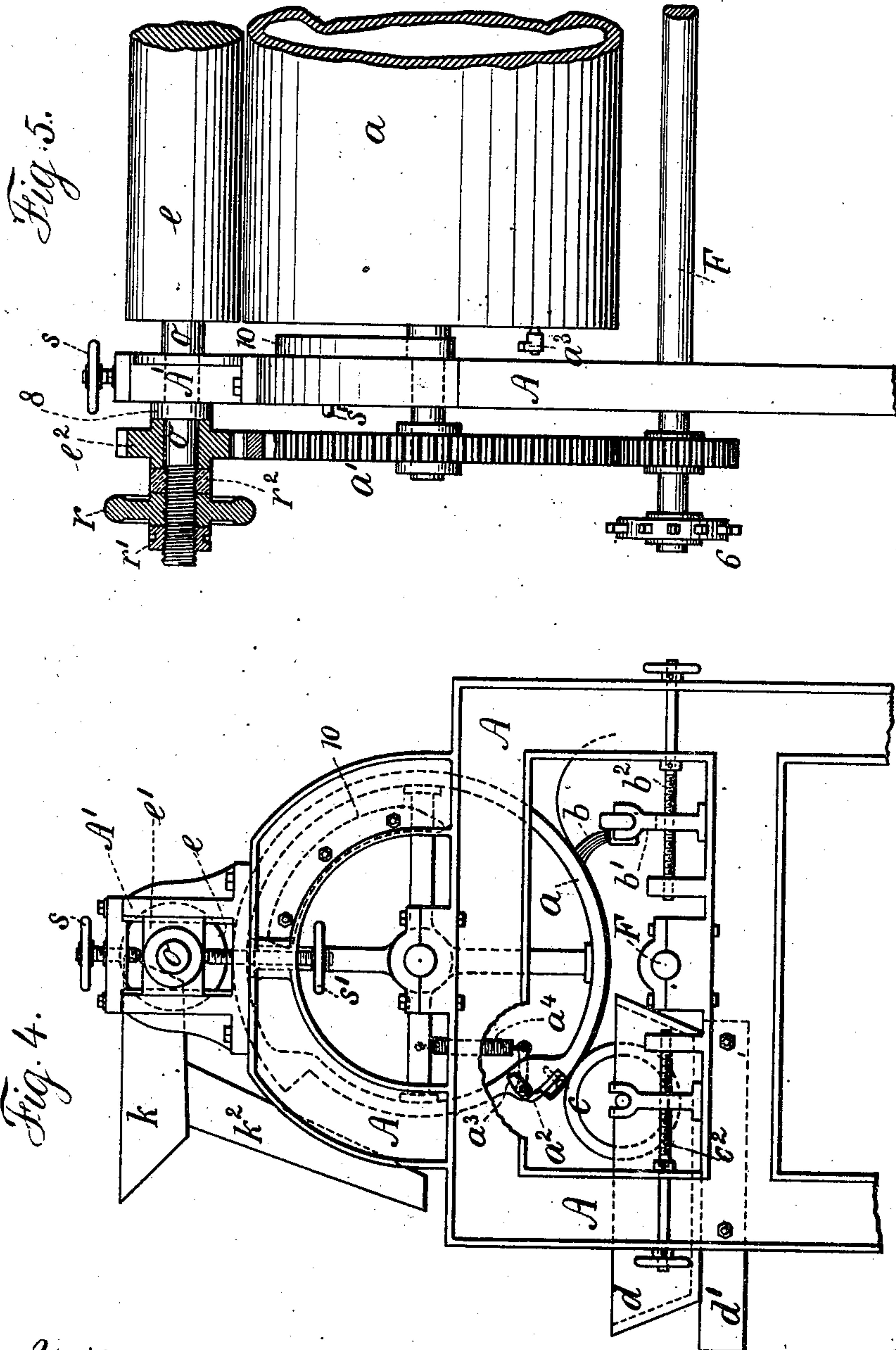
2 Sheets—Sheet 2.

H. CARLISLE.

MACHINE FOR PASTING AND MOUNTING SHEETS.

No. 546,506.

Patented Sept. 17, 1895.



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UNITED STATES PATENT OFFICE.

HARRY CARLISLE, OF SHUTESBURY, ASSIGNOR TO THE HOLYOKE CARD AND PAPER COMPANY, OF SPRINGFIELD, MASSACHUSETTS.

MACHINE FOR PASTING AND MOUNTING SHEETS.

SPECIFICATION forming part of Letters Patent No. 546,506, dated September 17, 1895.

Application filed July 1, 1895. Serial No. 554,563. (No model.)

To all whom it may concern:

Be it known that I, HARRY CARLISLE, a subject of the Queen of Great Britain, residing at Shutesbury, in the county of Franklin and State of Massachusetts, have invented a new and useful Improvement in Machines for Pasting and Mounting Sheets, of which the following is a specification.

My invention relates to a machine for pasting printed, lithographic, or photographic sheets and mounting the same upon a backing-sheet of cardboard of any desired thickness suitable for the size and uses of the sheets, which are of pictorial or ornamental character for advertising and other uses. Heretofore these sheets have been pasted and mounted by hand, and the moistening action of the paste and the action in various directions of the brush or other device in hand-mounting the pasted sheet upon the sheet of cardboard inevitably stretched the pasted sheet more or less unevenly, so as to change its proportions, with the result that it was difficult, if not quite impossible, to die out ornamental forms or to cut up with true margins sheets on which a number of pictures were printed; and the object of my invention is to overcome these difficulties.

In carrying out my invention I employ a receptacle for a pile of printed sheets, a table adjustable for the size of the sheets being pasted and mounted, and upon which table one sheet at a time is deposited and delivered to the gripper upon a revolving cylinder, a brush for pressing the sheet against the cylinder and for slightly moistening the same, a trough for paste and a pasting-roller running therein and in contact with the cylinder for transferring paste to the sheet, a stand for holding the pile of superposed sheets of cardboard, a table on which one sheet at a time is deposited, and a device operated automatically by the revolution of the cylinder for feeding forward the sheets of cardboard one at a time, so that their advancing edges meet the advancing edge of the pasted sheet and the union of the two is effected. The cardboard sheets pass under a weighted roller and are pressed against the cylinder, and the gripper is opened and lets go of the printed sheet as the same is united to the sheet of card-

board. The sheet of cardboard with a printed sheet attached passes along onto an endless belt or apron and is conveyed away and received upon a table or other receptacle. Before the sheet of cardboard and attached printed sheet pass out from between the cylinder and pressure-roller the rotation of the cylinder brings the open gripper into position to take another printed sheet, after which the operations are repeated.

Other and minor details of the apparatus are hereinafter more fully described.

In the drawings, Figure 1 represents by a general elevation and section a diagrammatic view of my improved machine. Fig. 2 is a diagrammatic elevation of the driving mechanism. Fig. 3 is a plan view of the feeding devices for the cardboard sheet. Fig. 4 is a side elevation of the main frame, cylinder, and adjacent parts in larger size; and Fig. 5 is a partial elevation and section of the cylinder and pressure-roll and gears transversely of the machine.

The main side frames are shown at A, and the upper frames at A', and B are brackets extending out from one side of the machine and carrying the table C, and C' is a receptacle for superposed printed sheets placed face up.

D represents brackets extending out from the other side of the machine and carrying a table E, and E' is a receptacle for superposed sheets of cardboard.

F is the power-shaft in suitable bearings upon the frame A, and F' is the driving-pulley.

The cylinder *a* is provided with a shaft mounted in suitable bearings upon the main frame of the machine, and part of the cylinder is of reduced diameter. Upon one end of the cylinder-shaft is a gear *a'*, meshing with a small gear upon the end of the power-shaft F, the same being driven by the pulley F' in the direction of the arrows, and upon said cylinder *a* is a gripper-blade *a''*, running lengthwise of the cylinder at one edge of the part that is of reduced diameter. A brush *b* extends across the machine between the main side frames and is mounted at its ends in suitable frames *b'*, resting on the side frames, and the forward and backward adjustment of this brush is effected by screws *b''*. A paste-

roller *c* is provided with a shaft and at one end with a gear *c'*, which meshes with the gear *a'* on the cylinder-shaft. This paste-wheel is supported by frames at the ends of its shaft, which frames rest upon the main side frames, and adjusting-screws *c²* are provided for moving the paste-wheel nearer to or farther from the cylinder *a*. This paste-wheel rotates in a paste-holder *d*, formed as a box and extending across the machine and supported by plates *d'*, bolted to the side frames of the machine, and *d²* is a trough extending across between the main side frames and at an inclination, serving as a catcher for the waste paste that may fall from different parts of the machine in its operation. A pressure-roller *e* is provided with a shaft *o*, that is in suitable bearings *e'* upon the upper side frames *A'* of the machine, and upon the shaft *o* is a loose gear *e²*, meshing with the gear *a'* of the cylinder *a*, so that the power-shaft *F*, through the gears, operates the cylinder and paste-wheel and the pressure-roller. The hand adjusting wheels and screws *s s'* for the box or bearing of the pressure-roller are to be operated to bring said pressure-roller nearer to or farther from the cylinder *a*, and the upper wheel and screw *s* are to be elevated slightly above the box of the shaft, so as to permit the pressure-roller to rise for inequalities in the thickness of the cardboard sheets.

The table *C* is slotted at opposite sides longitudinally of the machine and is provided with a cross-bar *f* and standards *f'*, that pass through said slots and through the ends of the cross-bar, and there are guide-rods *f²* passing through the standards *f'*, the object of the cross-bar, standards, and guide-rods being to provide for different sizes of printed sheets, said parts being capable of adjustment and a sliding motion, so that whatever size the printed sheet may be its forward edge can be brought into the right position for engagement by the gripper-blade. A guide-rod *g* is secured along one edge of the table *E*, and a sliding standard *g'* surrounds this guide-rod and rises therefrom, and to this standard *g'* is connected a rod *g²*, the opposite end of the rod being connected to the gear *a'* by a crank-pin, so that with the rotation of the gear *a* longitudinal sliding motion will be imparted to the standard *g'*. Upon the surface of the table *E* are slideways *h h*, and straddling these slideways is a cross-head *h'*, to which cross-head is connected a slotted bar *h²*, and a cross-head *i*, extending laterally of the table *E*, is provided and connected to the standard *g'* at one end, and upon its opposite end is a roller *i'*. The slotted bar *h²* and cross-head *h'* are adjustably connected to the cross-head *i* by a bolt *7*. This adjustment between the cross-head *i* and the bar *h²* is necessary to provide for the various sizes of the sheets of cardboard.

Adjacent to the pressure-roller *e* and about on line with its shaft *o* is a trough *k*, supported at the sides of the machine and provided with

a scraping-blade *k'*, and extending from the trough *k* is a spout *k²*. The surplus paste is removed from the surface of the roller *e* by the scraper *k'* into the trough *k*, and as said trough *k* is inclined toward the end where the spout *k²* is located the accumulated paste runs by gravity down said trough and is discharged through the spout *k²* into the paste holder or box *d* beneath. I provide an endless belt or apron *l*, running upon a series of rollers *l'* and extending from near the cylinder *a* longitudinally over the table *C* and beyond, and I provide an adjusting-roller *l²* for applying a tension by an adjusting device *m* to this endless belt *l*, which belt or apron is preferably made of rubber fabric, and I provide a scraper *m'* and adjusting device *m²* therefor by which pressure is applied to the scraper *m'*, so as to thoroughly cleanse the surface of the endless belt from paste or water. A roller *n* is provided, and around the same this endless belt *l* passes, and on the end of its shaft is a sprocket *3*. Beneath the roller *n* is a cleansing-brush *n'* in a tank of water *n²*, and on the shaft of said brush is a sprocket *4*, and a chain *5* passes around the sprocket *6* on the power-shaft *F*, and in turn around the sprockets *3* and *4*, so as to rotate the roller *n* and drive the endless belt and rotate the cleansing-brush *n'* to cleanse the surface of the endless belt and wash the same with the water taken up from the tank *n²*, and the surplus water in turn is removed by the scraper *m'*, so as to leave the advancing portion of the endless belt or apron clean.

The operation of the machine is as follows: The cylinder *a* and adjacent parts being rotated by power, as hereinbefore described, an attendant takes from the pile of printed sheets on the sheet-receptacle *C'* one sheet *t* at a time and lays the same face up on the table *C*, passing the forward edge of the printed sheet through an opening made between the surface of the table and a shield *2*, whose office is to act as a guide to locate the forward end of the sheet and to receive any paste thrown off from the cylinder and prevent it falling on the printed surface of the sheets, and the back edge of the sheet is placed against the cross-bar *f*, which cross-bar has been previously set, as hereinbefore described, for the size of the printed sheet. In this position of the printed sheet its forward edge is in position to be engaged by the gripper-bar *a²* as the cylinder comes around. The rotation of the cylinder pulls the sheet with the printed face next the cylinder off the table and draws the same downward past the brush *b*, the action of which is to even the sheet on the cylinder and to moisten the same slightly. The further rotation of the cylinder carries the sheet between the same and the paste-roller *c*, so that the surface is thoroughly and evenly pasted. In the meantime another attendant takes a cardboard sheet from the receptacle *E'* and places said cardboard sheet upon the slideways *h* on the table *E'*, the

back edge of the sheet being laid against the cross-head h' , the cross-head having been previously adjusted for the size of the sheet of cardboard. As the cylinder a revolves further and brings the advancing edge of the pasted sheet thereon to the highest point the sheet of cardboard is drawn forward through the action of the cross-head i and connecting-rod g^2 upon the gear a' , so that the advancing end of the pasted printed sheet and the advancing end of the sheet of cardboard meet below the center of the pressure-roller e and the union of these two commences. As the cylinder a revolves further the arm of the gripper-blade strikes a cam-plate 10 upon the side of the main frame, and the gripper-blade is thereby opened and kept open to receive the forward edge of the next printed sheet, which has already been placed in position by the attendant upon the table C to be engaged as the gripper-blade closes by the action of a spring a^4 as its arm a^3 runs off the cam-plate 10. As the cylinder a advances from the point where the gripper-blade is opened the printed sheet by the pressure exerted by the roller e is united to the under face of the cardboard sheet and the surplus paste is pressed out sideways, and as the cardboard sheet passes out from between the cylinder and pressure-roller a row of surplus paste is left upon the pressure-roller to be removed by the scraper k' into the trough k and to gradually, as it accumulates, find its way by the spout k^2 into the paste-holder d . The cardboard sheet with the printed sheet attached passes out onto the endless belt or apron l , is conveyed along upon such belt, and at the distant end is removed by another attendant and the successive sheets placed in a pile or set aside for drying. The second printed sheet, as received by the cylinder a , occupies exactly the same position upon the cylinder as did the previous sheet, so that while the surface of the cylinder not occupied by the sheet receives paste from the pasting-roller the same does not get upon the printed face of the sheet, and as the cylinder revolves this paste with each rotation is largely or wholly removed by the action of the brush b and is to a greater or less extent delivered upon the surface of the sheet as the same passes the brush. These operations are continuously repeated for each sheet. Should there be any paste upon the edges of the cardboard as the same is delivered upon the endless belt, this paste will probably be left upon the belt, and as the belt passes its lowest point it is wetted and washed by the action of the cleansing-brush or brush-wheel n' , and the scraper m' , which extends laterally across the endless belt and presses thereon, removes all of the surplus water and paste, so that as the belt returns to the point for receiving each cardboard sheet it is cleansed, so that no paste remains to touch the printed faces of the sheets.

The cardboard sheets employed not only vary in area but in thickness, and provision

must be made for the varying thickness, and it frequently happens that a number of sheets supposed to be of the same thickness will vary slightly, so that a yielding action must be provided for in connection with the pressure-roller e , and, while said pressure-roller with thin sheets of cardboard should revolve at approximately the same surface speed as the cylinder a , when the thickness of the cardboard sheets is materially increased there would arise a binding action because of the looseness between the gears a' and e^2 that might have a tendency to tear the moist printed sheet as the same is being pasted upon the surface of the cardboard. To provide for these contingencies and to insure the pasting of the sheet and overcome the liability of tearing the same, I place the gear-wheel e^2 loosely upon the shaft o of the pressure-roller, and I provide a hand-wheel r upon a threaded end of the shaft o , as will be seen in Fig. 5, and between the hand-wheel r and the loose gear-wheel e^2 I provide a rubber washer r^2 and a clamping-nut r' on the outer end of the threaded shaft, outside the hand-wheel, and the object of these parts is to clamp and frictionally hold the loose gear-wheel e^2 against a collar 8 upon said shaft o with just sufficient power to cause the pressure-roller to rotate with the cylinder a , and should there be any strain on the parts because of difference in speed the shaft will slip in the hub of the gear e^2 , so that no harm will come to the printed sheet as the same is being pasted upon the cardboard. Any desired pressure can be brought to bear by the operation of the hand-wheel r upon the loose gear e^2 to produce friction between the parts.

In my improvement there is little or no stretch of the printed sheet as the same is moistened by the paste and the sheet secured to the sheet of cardboard, as the action is so quick that there is no time for the paste to strike through the paper, so that with printed sheets containing a large number of small pictures there is no distortion of the parallel lines between the pictures, such as is the case where the sheets are mounted by hand, and no difficulty arises in sheets mounted by this machine in cutting up or dieing out the sheets after they are pasted to the cardboard.

I am aware that machines have heretofore been made and used wherein a continuous web of paper or of fabric has been employed and has been pasted and passed through a machine, and upon the surface of the same sheets of cardboards have been secured by pressure, the continuous sheet thereafter being cut up in the making of covers for books; but I do not herein claim any such construction.

I claim as my invention—

1. The combination with a rotating cylinder and a gripper thereon and means for operating said gripper, of a receptacle for printed sheets, a receptacle for sheets of cardboard, guides for locating one printed sheet at a time

to be taken by the gripper, a paste roller for pasting the backs of the printed sheets, adjustable means for locating one sheet of cardboard at a time and for moving the same to meet the pasted printed sheet, and a roller above the cylinder for pressing the printed sheet and card-board together, substantially as set forth.

2. The combination with a rotating cylinder and a gripper thereon and means for operating said gripper, of a receptacle for printed sheets, a receptacle for sheets of card-board, guides for locating one printed sheet at a time to be taken by the gripper, a paste roller for pasting the backs of the printed sheets, adjustable means for locating one sheet of cardboard at a time and for moving the same to meet the pasted printed sheet, and a roller above the cylinder for pressing the printed sheet and card-board together, and an endless belt upon which the united sheets are delivered and conveyed away, substantially as set forth.

3. The combination with a cylinder, means for rotating the same and means for engaging and pasting thereon one printed sheet at a time, of a receptacle for superposed sheets of cardboard, a table upon which is laid one sheet of cardboard at a time, a cross head against which the back ends of the sheets of cardboard are laid and means for adjusting said cross head to provide for cardboard sheets of various sizes, and means for operating said cross head in unison with the cylinder for feeding forward the cardboard sheets to meet the advancing ends of the pasted printed sheets and a roller above the cylinder for applying pressure as the sheets are united, substantially as set forth.

4. In a machine for pasting printed sheets and uniting the same to sheets of cardboard, the combination with a receptacle for sheets of cardboard, of a table E, slide-ways h longi-

tudinally of said table, a cross head h' , a slotted bar h^2 connected to said cross head, a cross head i and bolt for adjustably connecting the same to the slotted bar h^2 said parts being capable of adjustment for various sizes of sheets of cardboard, substantially as set forth.

5. In a machine for pasting printed sheets and uniting the same to sheets of cardboard, the combination with a receptacle for sheets of cardboard, of a table E, slide-ways h longitudinally of said table, a cross head h' , a slotted bar h^2 connected to said cross head, a cross head i and bolt for adjustably connecting the same to the slotted bar h^2 , the relation of said parts being capable of adjustment for various sizes of sheets of cardboard, a guide rod g upon the side of the table, a sliding standard g' upon said guide rod and connected to the cross head i , and a connecting rod g^2 extending from said standard g' to a gear wheel upon the cylinder shaft whereby with the rotation of the cylinder the cardboard sheets are drawn forward one at a time, substantially as set forth.

6. In a machine for pasting printed sheets and uniting the same to sheets of cardboard, the combination with a gripper cylinder and a pasting roller and a pressure roller, of an endless belt or apron for receiving the product and conveying the same away, means for keeping said endless belt at a tension, means for cleansing the surface of the same with water and other means for removing the surplus water and surplus paste so that the advancing portion of the belt is always clean for receiving the successive united sheets, substantially as set forth.

Signed by me this 20th day of June, A. D. 1895.

HARRY CARLISLE.

Witnesses:

GEO. T. PINCKNEY,
HAROLD SERRELL.