April 7, 1936. F. W. STORCK 2,036,971

SHEET STACK CLAMP FOR DUPLICATORS

Filed Dec. 22, 1934 2 Sheets-Sheet 1

Fig. 1.

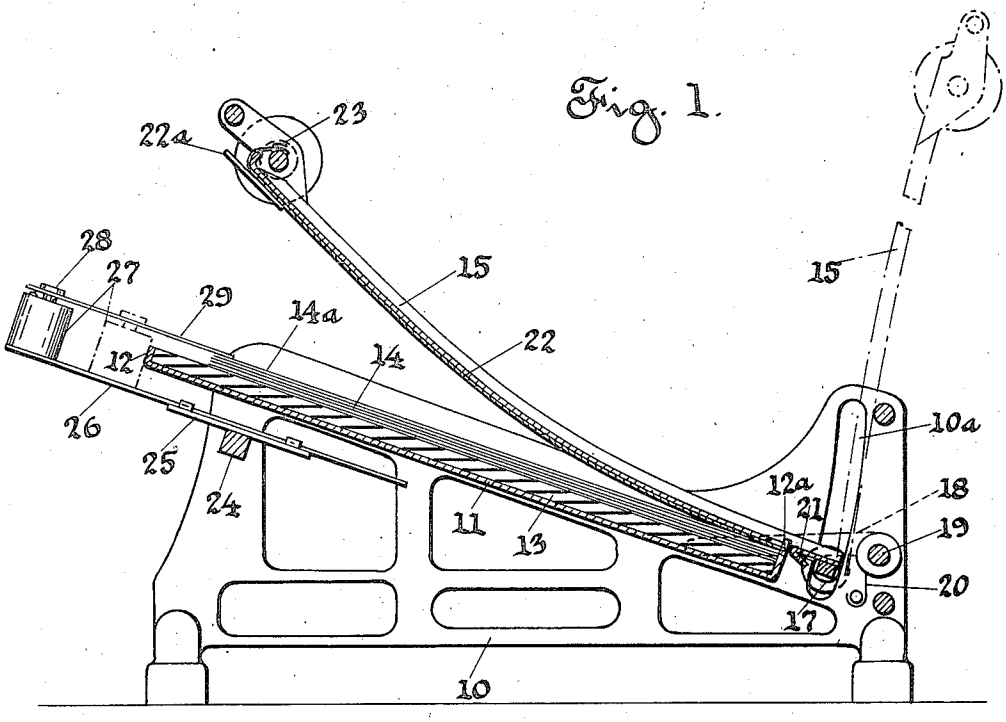
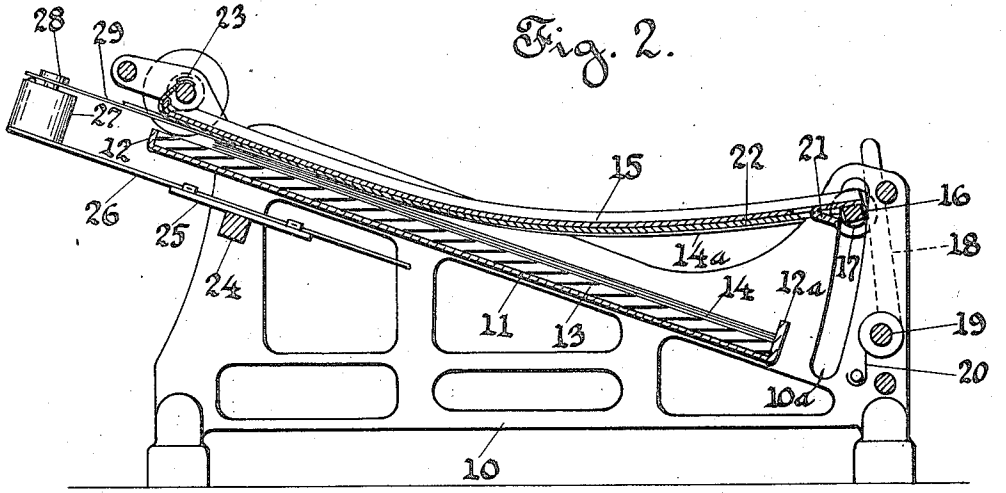



Fig. 2.




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Fig. 3.

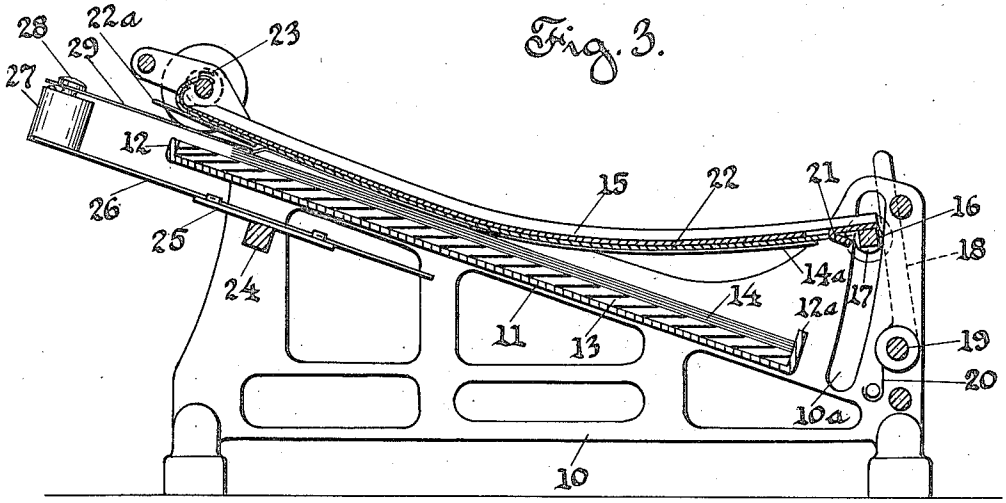



Fig. 4.

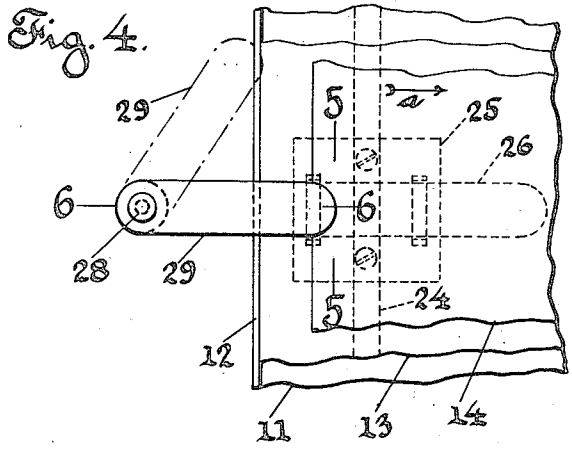



Fig. 5.

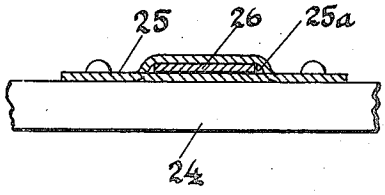
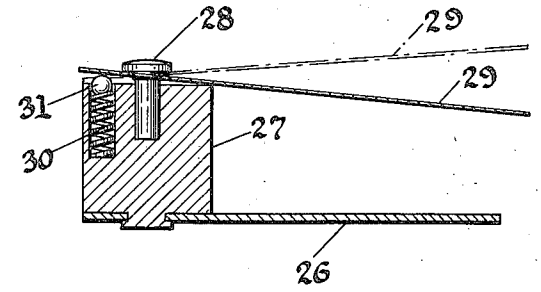



Fig. 6.




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# UNITED STATES PATENT OFFICE

2,036,971

## SHEET STACK CLAMP FOR DUPLICATORS

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Application December 22, 1934, Serial No. 758,832

8 Claims. (Cl. 101—131)

My invention relates to gelatin type duplicators and more particularly to a sheet control device adapted for use in connection with duplicators of this general type.

In many gelatin type duplicators the copy to be printed is transferred to a gelatin bed or film. The gelatin bed or film is usually secured to a movable element which may be engaged with a stack or plurality of sheets of paper, and upon which the copy on the master sheet is to be consecutively duplicated.

When the uppermost sheet of the paper stack is engaged by the gelatin, due to the adhesive characteristics of the gelatin, this uppermost sheet will adhere to the gelatin when the member, to which the gelatin is secured, is moved to its disengaging position away from the paper stack. Due to the usual pressure exerted by the operator in engaging the gelatin with the uppermost sheet of the stack, a partial vacuum or adhesion is formed between several of the uppermost sheets of the stack.

When an attempt is made to disengage only the top sheet from the stack, one or more sheets will be displaced from the stack, due to the above-mentioned vacuum or adhesion, as they will have a tendency to cling to the sheet, upon which the duplication has been completed. This, as is obvious, greatly retards the speed and efficiency of the machine and operator.

In duplicators of the above referred to gelatin type, the operation and results are greatly facilitated when the stack or sheets of paper are supported on a compressible or yielding element. This eliminates irregularities which might appear in the stack of paper, gelatin bed or film or the other elements necessary to the combination.

Accordingly, the object of my present invention is to provide a simple and efficient yielding paper stack clamp for duplicators and the like that may be readily engaged with a stack of paper sheets supported on a compressible or resilient mat and in a manner whereby, when the uppermost sheet is disengaged from the stack, in the manner above described, the succeeding sheets will be retained in their relative position in the stack formation.

A further object of my invention is the provision of an adjustable means whereby my device may be readily positioned, relative to the size of sheets contained in the stack, and engaged with a portion of the face plane of said stack to produce the most effective clamping area to give the desired results.

With the above and other objects in view, my invention comprises a novel combination and arrangement of parts hereinafter described and more specifically pointed out in the appended claims.

In the accompanying drawings I have illustrated my device, embodied with one type of duplicator, sufficient to enable those skilled in the art to understand the construction and operation thereof.

The particular type of duplicator which I have illustrated is completely shown and described in my U. S. Letters Patent No. 1,993,699, and it is to be understood that the illustrating of this particular type of duplicator is merely to show the adaptation of my device and is not to be construed as limiting my device thereto.

Referring to the drawings:

Fig. 1 is a vertical longitudinal section showing one side of a gelatin type duplicator, in this view the printing platen is shown at the beginning of its engaging position with a stack of of sheets of paper, the printing platen is also shown in this view, by broken lines, in its normal inoperative position.

Fig. 2 is a view corresponding substantially to Fig. 1 but shows the printing platen as positioned upon completion of duplicating the copy upon the uppermost sheet of the stack of paper.

Fig. 3 is a view corresponding to Fig. 2 but shows the printing platen slightly started on its return path to its normal disengaged position, and the uppermost sheet of the stack partially withdrawn from the clamping finger.

Fig. 4 is a plan view of my clamping device, in this view my resilient mat and machine bed are shown in a partial plan view.

Fig. 5 is a sectional view taken substantially along line **5—5**, Fig. 4 and viewing in direction of arrow *a* same figure.

Fig. 6 is a vertical longitudinal sectional view taken substantially along line **6—6**, Fig. 4.

As indicated by the drawings, the duplicating machine shown comprises opposed side frames **10** and an inclined bed **11** which is provided with upwardly extending contiguous walls **12**. This bed is adapted to receive and retain a resilient mat **13** upon which the stack of paper sheets **14** is supported, the inwardly extending end of said stack abutting the inner face of the end wall **12***a* of the bed **11**.

A curved printing platen **15** is secured to a transverse bar **16** which is provided with opposed rotatably mounted rolls **17** adapted to engage in opposed arcuate openings **10***a*, in the frame, said rolls being positioned to contact with opposed

levers 18 and swing them upwardly about their pivot 19 and against the tension of the torque spring 20.

The curved platen 15 is provided at one end with hooks 21 adapted to engage slots in one end of a gelatin film 22 having the master copy to be duplicated printed thereon. The other end of the film is secured to hooks 23 which are secured to a rotatable tensioning bar and by means of which the film 22 is drawn tightly over the face of the platen 15.

My referred to patent completely shows and describes a duplicating machine of the above general structure, therefore further detailed description is thought unnecessary.

From the following it will be obvious that my clamping device may be readily adapted and attached to duplicators of various structures which embody gelatin or a like element in duplicating from a master copy and wherein sheets of paper or the like, in stack formation, are utilized and to be duplicated upon.

Secured to a cross-member 24 of the machine is a support 25 having opposed openings 25*a* formed therein and which are adapted to frictionally engage the adjustable supporting arm 26 of my clamping device. The outer end of the supporting arm 26 has secured thereto one end face of a body member 27, the opposed upper end face of said body member being provided with a pivot stud 28 having an enlarged head portion in spaced relation with the upper end face of said member. This stud 28 pivotally retains my engaging finger 29 in a spaced relation to the supporting arm and permits a free radial movement of the engaging finger 29 in a substantially horizontal plane and a tensioned vertical movement of said finger. It is preferable to make the engaging finger in itself yielding in character, which, with the above mentioned tensioning of the finger, permits of a greater scope in the height of stack utilized. Also, by forming the supporting arm or its support slightly arcuate in length, and of sufficient resiliency, greater friction will be produced between the arm 26 and support 24 and more readily retains the clamping device in a desired adjusted position relative to the paper stack.

The body member 27 is provided with an opening adapted to receive a compression spring 30 and contact ball 31, see Fig. 6. This contact ball yieldably engages the under side face of the outer end of the finger 29 and normally forces the inner end of said finger downwardly in the direction of the supporting arm 26. As the finger 29 is raised, as shown by broken lines, Fig. 6, to engage the upper face of a stack of paper, the spring 30 is compressed and, as the stack is diminished the ball and spring causes a downward pressure to be exerted and maintained on the inner end of the finger 29 which is in engagement with the stack.

My clamping device is positioned so that the inner end of the finger 29 engages a portion of the uppermost face of the stack 14 and at the outer end thereof, see Fig. 4. When replenishing the stack the finger 29 is moved sidewise, as shown by broken lines, and when the stack has been positioned, the finger is returned to its engaging position. The operator then moves the platen 15 into engaging relation with the uppermost sheet 14*a* of the stack, see Fig. 1, and continues the movement until the entire uppermost sheet 14*a* has been engaged and the master copy duplicated thereon. As the platen is actuated through its engaging cycle, the uppermost sheet will adhere to the gelatin and remain in contact until forcefully removed. To facilitate this operation of removing the duplicated copy, and also to prevent the gelatin from contacting the engaging finger 29, I provide a masking strip 22*a*, which extends transversely of the gelatin and in the path of the outer end of the stack.

In this particular instance, as the platen is actuated to its normal inoperative position, the outer end of the uppermost sheet 14*a* is withdrawn from under the clamping finger 29, see Fig. 3, the pressure of this clamping finger retains the remaining sheets in stack formation. During the path of travel of the platen to its normal inoperative position, pressure is again exerted along the face of the stack and to the inner end thereof. The inner end of the stack is restrained due to its frictional resistance against the end wall 12*a* and the angular position of the stack.

Having thus described my invention it is obvious that changes and modifications may be made therein without departing from the scope thereof; therefore I do not wish to be limited to the specific details herein disclosed, but what I claim is:

1. In a duplicator, a support for a plurality of copy sheets, a printing platen having secured thereto a master copy of matter to be printed upon said copy sheets, means for retaining said copy sheets relative to said support by yielding means adjacent one edge thereof and in engagement with a portion of the edge face plane of the uppermost of said copy sheets and substantially in a plane parallel to the face of said sheet.

2. In a duplicator, a support for a stack of copy sheets, a printing platen having secured thereto a master copy of matter to be printed upon the uppermost sheet of said stack together with yielding means positioned adjacent one edge of said stack and in engagement with a portion of the uppermost face thereof whereby said printed sheet is singularly disengaged from contact with said stack by said printing means after receiving the imprint from said master copy.

3. A duplicator adapted to receive a stack of sheets to be printed upon, resilient holding means positioned adjacent one edge of said stack and in engagement with a portion of the uppermost face thereof for retaining said stack in relative position in contact with one another, a printing platen having copy to be printed upon the uppermost sheet of said stack and means whereby said printed sheet is disengaged, by said platen and copy, from said holding means and stack.

4. A duplicator adapted to support a stack of sheets to be printed upon, adjustable, resilient holding means positioned adjacent one edge of said stack and adapted to engage a plane portion of said stack and whereby said stack is retained in a relative position in contact with one another; a platen having copy to be printed upon the uppermost sheet of said stack with means for engaging said platen and uppermost sheet with further means whereby said uppermost sheet is singularly disengaged from said stack by said platen and copy.

5. In a duplicator, a support for a stack of copy sheets, a printing platen, a gelatin film secured to said printing platen and adapted to be engaged with the uppermost sheet of said stack with means for preventing said film engaging the complete plane of said uppermost sheet, resilient means adjustably secured to said

support and yieldingly engaging a portion of the uppermost sheet of said stack and within the portion of said uppermost sheet not engaged by said film.

6. In a duplicator, a support for a stack of copy sheets, a resilient member interposed between said support and stack, guiding means abutting one end of said stack, adjustable yielding means engaging in the opposed uppermost end face portion of said stack, a printing platen having copy to be printed upon a portion of the plane of said uppermost copy sheet with means for engaging and disengaging said platen and copy with said stack.

7. A magazine for a duplicator, having a printing platen, which comprises a support for a stack of copy sheets, a resilient member interposed between said support and said stack, guiding means for the opposed sides and one end of said stack, an adjustable yielding member adapted to engage a portion of the opposed uppermost end face of said stack with means for engaging and disengaging said member with said stack.

8. A magazine for a duplicator, having a printing platen adapted to support a gelatin film and to be actuated to opposed positions for engagement and disengagement with the topmost sheet of a stack of copy sheets, which comprises a resilient support for said stack, an adjustable yielding member adapted to engage a portion of the uppermost end face of said stack and whereby, when said film has engaged said topmost sheet said sheet will be singularly disengaged from said yielding member and stack on the converse movement of said platen.

FREDERICK W. STORCK.