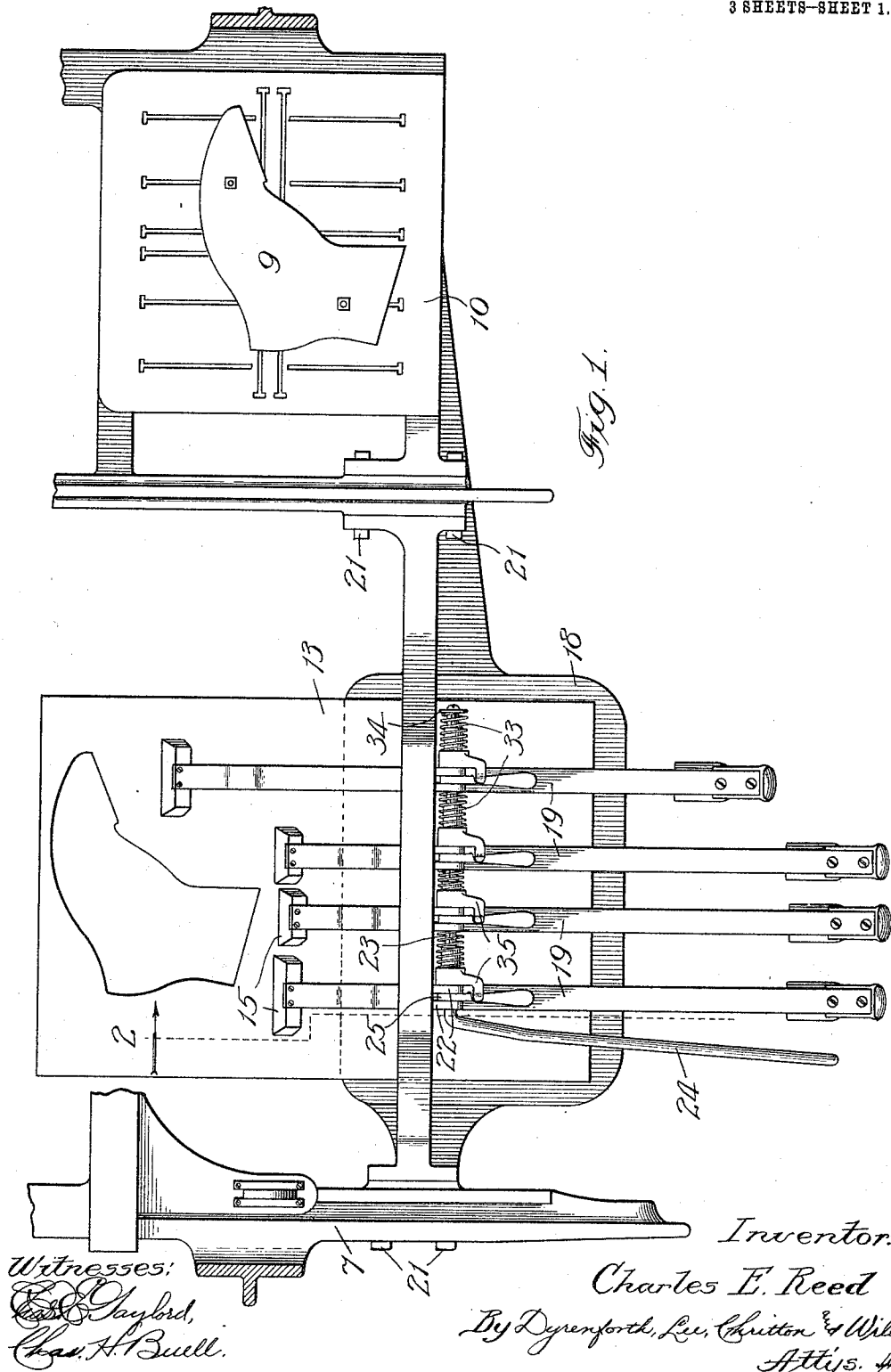


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 PATTERN CUTTING MACHINE.
 APPLICATION FILED MAR. 29, 1911.

1,006,273.

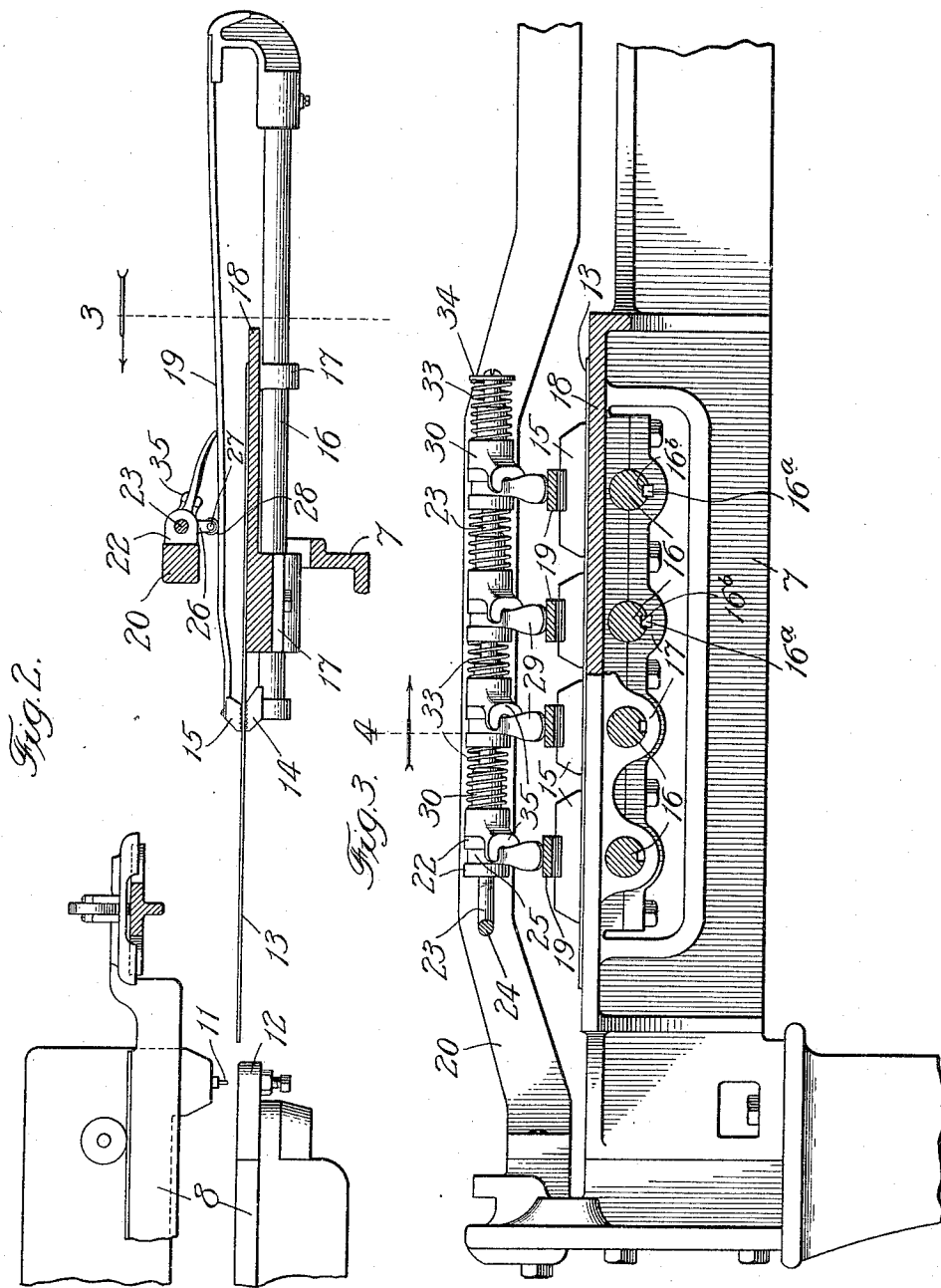
Patented Oct. 17, 1911.

3 SHEETS—SHEET 1.



1,006,273.

3 SHEETS—SHEET 2.



Witnesses:
 J. E. Gaylord.
 Chas. H. Bull.

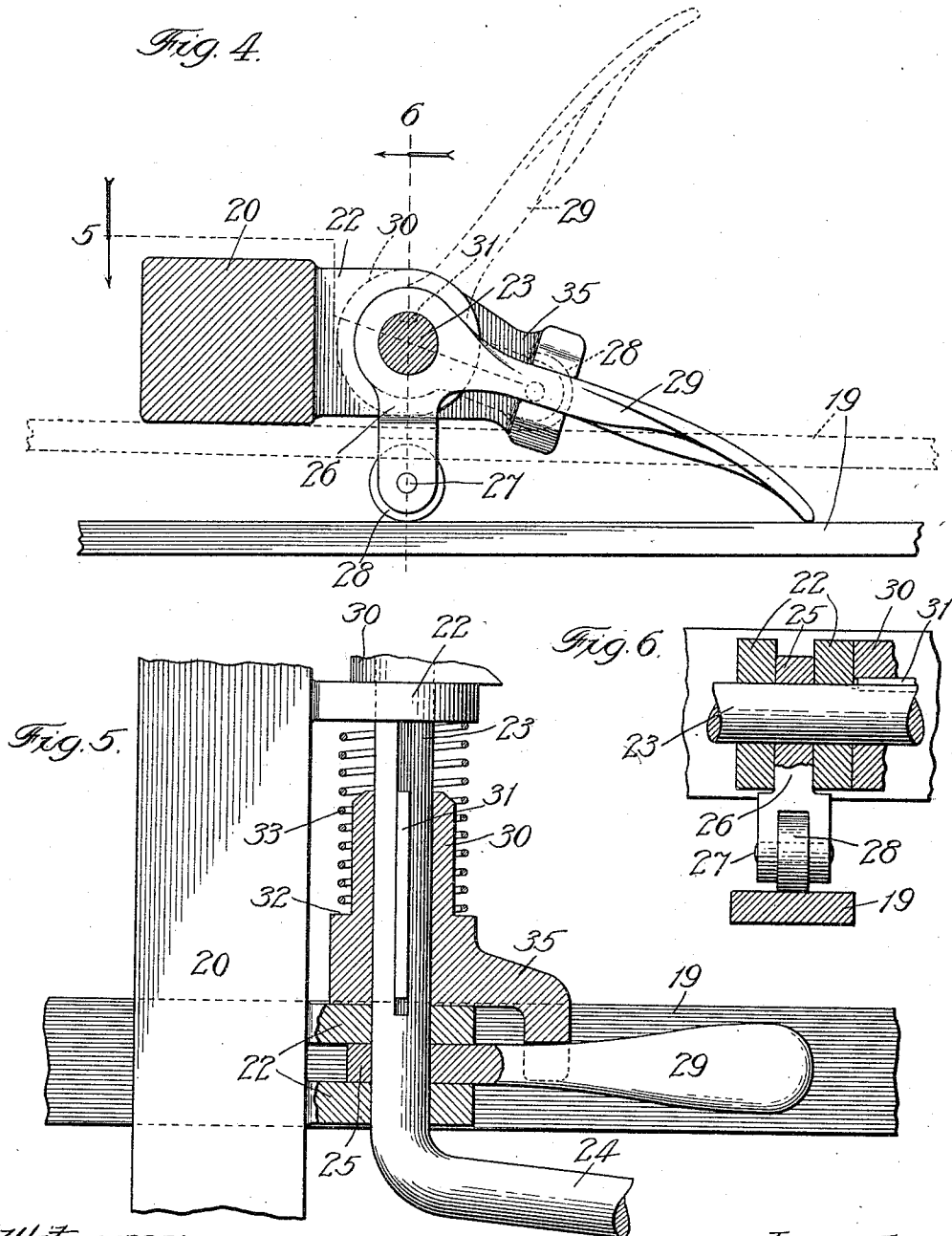
Inventor:
Charles E. Reed.
By Deyenforth, Lee, Britton & Wiles,
Attys. #

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3 SHEETS—SHEET 3.



Witnesses:
Edw. J. Gaylord,
Chas. H. Buell,

Inventor:
 Charles E. Reed.
 By *Dyrenforth, Lee, Chittor & White*
 Attys. #

UNITED STATES PATENT OFFICE.

CHARLES E. REED, OF CHICAGO, ILLINOIS, ASSIGNOR TO CHARLES E. REED & COMPANY,
OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

PATTERN-CUTTING MACHINE.

1,006,273.

Specification of Letters Patent.

Patented Oct. 17, 1911.

Application filed March 29, 1911. Serial No. 617,696.

To all whom it may concern:

Be it known that I, CHARLES E. REED, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Pattern-Cutting Machines, of which the following is a specification.

My invention relates more particularly to improvements in pattern-cutting machines of the pantographic type employing a pantographic frame equipped at one end with a stylus or tracer adapted to be moved about the edge of a pattern-model for producing the travel in a path corresponding to the outline of the model, of a punch-device secured at another end of the pantograph frame and operating on a sheet of material from which the patterns are to be cut, a machine of this type forming the subject of United States Reissue Letters Patent No. 11,569, granted to me September 29, 1896; and my invention has particular reference to improvements in the means for holding the sheets of flexible material during the operation of the punch-device upon them for cutting therefrom the patterns to be made.

Owing to the mode of operation of machines of this general type, the sheet from which the patterns are to be cut can be supported from one end only, as supporting them otherwise would cause interference between the punch-device and the sheet-clamps so employed. As the sheets are more or less flexible, it is desirable, in order that they be held rigidly, to clamp them at points as near as possible to the path which the punch-device follows in cutting the pattern, and to so construct the several clamps used for this purpose that they may be adjusted independently of each other without disturbing the position of the sheet held by the unadjusted clamps, so that, if, after the operation of cutting the pattern is begun and a clamp is found to have been initially adjusted into the path of the punch-device, such clamps may be moved backward without destroying the partly cut pattern. Furthermore, it is desirable that the clamps when initially positioned, preparatory to the clamping of the sheet, be undisturbed during the sheet-clamping operation, as

movement of the clamps from this cause destroys accuracy of adjustment.

The object of my invention, generally stated, is to provide a machine which will present the above set forth desirable features whereby the adjustment of the sheet-clamping devices may be readily effected independently of each other and without disturbing the initial adjustment of the clamps in the operation of tightening them upon the sheet, or the position of the sheet when readjustment of a clamp or clamps becomes necessary after the cutting of a pattern has commenced.

Referring to the accompanying drawings—Figure 1 shows, by a plan view, a portion of a pantographic pattern-cutting machine such as that disclosed in the patent referred to, provided with sheet-clamping mechanism constructed in accordance with my invention and showing a sheet of pattern material in position to be operated upon by the punch-device. Fig. 2 is a section taken at the irregular line 2 on Fig. 1 and viewed in the direction of the arrow. Fig. 3 is a section taken at the line 3 on Fig. 2 and viewed in the direction of the arrow. Fig. 4 is an enlarged section taken at the line 4 on Fig. 3; and Figs. 5 and 6, sections taken at the lines 5 and 6, respectively, on Fig. 4.

A portion of the frame of the pantographic pattern-cutting machine illustrated, and in connection with which I have chosen to illustrate my invention, is represented at 7 and forms a support for a pantographic frame 8 which carries at one end a stylus or tracer, (not shown) adapted to be moved in contact with the edges of a pattern represented at 9 and fixed on a table 10 carried by the frame 7, and at its other end the cooperating male and female members 11 and 12, respectively, of a punch-device, which in the operation of the machine is caused to travel in a path corresponding to the outline of the pattern-model 9 and punch the pattern to be made from a sheet of material such as that represented at 13, which latter extends into the space between the members 11 and 12 and is supported as hereinafter described, the construction above described and its mode of operation being well known in the art.

The means for clamping the sheet 13 to securely hold it in place during the pattern-cutting operation are formed of a plurality of clamping devices, each of which comprises a pair of jaws 14 and 15, the jaws 14 being fixed on the rear ends of stiff, parallel rods 16 slidably confined in bearings 17 formed on the under side of a table 18 connected with the frame 7 and held against rotation by keys 16^a connected with the rear bearings 17 and projecting into slots 16^b extending longitudinally of the rods 16; and the jaws 15 extending above their cooperating jaws 14 and carried by bars 19 of spring metal which are connected with the forward ends of the rods 16, the bars 19, owing to their inherent spring tension, tending to hold the jaws 15 carried thereby in raised, and consequently open, condition. Extending above the bars 19 and transversely thereof is a bar 20 which is rigidly connected at its ends to the frame 7, as by bolts 21, this bar being equipped along its front side with pairs of spaced lugs 22, a pair of which extends immediately above each of the rods 19, these lugs forming bearings for a rock-shaft 23 provided with an operating-lever 24. Journaled on the shaft 23 between the members of the pairs of lugs 22 are collars 25 provided with depending bifurcated members 26 carrying shafts 27 eccentric of the shaft 23 and on which rollers 28, adapted to cooperate with the spring-bars 19 immediately below them, are journaled, each of these collars being provided with operating handles 29 for operating them independently of each other.

The parts of the construction described are so related, as shown, as to cause the respective jaws 15 to be moved into rigid clamping engagement with the sheet 13, as illustrated in Fig. 2, when the collars 25 are turned to the position represented in the figure last referred to, by reason of the engagement of the rollers 28 with the upper surfaces of the spring-bars 19 immediately below.

Cooperating with the rollers 25 are devices for releasably clutching these collars to the shaft 23 in order that all of the sheet-clamping devices may be operated together for clamping or releasing the sheet, by operating the handle 24, a description of the devices just referred to being as follows: Surrounding, and longitudinally movable on, the shaft 23 between the pairs of lugs 22, are sleeves 30 which are feathered to the shaft 23 as indicated at 31 and are formed with shouldered portions 32 which serve as abutments for coil-springs 33 surrounding the shaft and bearing at their other ends against the faces of the adjacent lugs 22, the spring 33 for the sleeve 30 at the right-hand end in Fig. 3 bearing against a washer 34 on the

shaft 23 instead of one of the lugs. The sleeves 30 are equipped with laterally-extending bifurcated members 35, the arms of which are adapted to embrace adjacent levers 29 and be releasably held in such position under the action of the springs 33.

The operation of the mechanism is as follows: The operator, assuming that the jaws 14 and rollers 28 are in raised position and the arms of the bifurcated members 35 are straddling the adjacent levers 29, introduces the sheet 13 to be operated on between the cooperating jaws 14 and 15, to a position in which the front end of the sheet lies upon the table 18 and the rear, free edge, of the sheet extends into a position to be operated on by the traveling punch-device. After positioning the sheet as stated, the operator then slides the rods 16 in their bearings, independently of each other, to a position in which the cooperating jaws 14 and 15 will extend as closely as possible to the path in which the operator believes the punch-device will travel, it being desirable, when possible, to support the sheet by the clamps at its lateral edges as well as at its front end, as represented. After each clamp has been adjusted, as described, the operator swings the lever 24 downwardly toward the front end of the machine thereby turning all of the collars 25 and the sleeves 30 to the right in Fig. 4, with the result of swinging all of the rollers 28 downwardly from the position represented by dotted lines in Fig. 4 to the position represented in full lines therein, thus forcing these rollers against the bars 19 with which they cooperate and swinging the latter to a position in which the sheet 13 is firmly clamped between the jaws 14 and 15, as represented in Fig. 2.

Should readjustment of any one or more of the sheet-clamping devices become necessary for any reason after the operation of cutting the pattern has been commenced, as for example, should it be discovered that one of the clamping devices was adjusted initially to a position in which it extends into the path of the punch-device, such interfering clamp or clamps may be readily readjusted without disturbing the position of the sheet by first disengaging the jaw 14 of the clamp to be adjusted, thereupon moving the bar 16 of this clamp to the proper readjusted position and again clamping the jaws of this clamp against the sheet. Any one of the pairs of jaws 14 and 15 may be released from the sheet without disturbing the other jaws, by sliding the sleeve 30 cooperating with the clamping device to be adjusted, to the right in Fig. 3 against the resistance of its spring 33, thereby moving the bifurcated portion 35 of this member 30 out of engagement with the cooperating lever 29, thus permitting the operator to swing the lever

29 upward to raise the roller 28 connected therewith for releasing the bar 19 immediately below it, whereupon the latter, and the jaw 14 carried thereby, swings upward. The clamping device thus released may then be adjusted as desired, and when so readjusted, may be again clamped to the sheet by swinging the lever 29 of this clamp downwardly, at the same time sliding the sleeve 30 cooperating therewith to the right in Fig. 3, thus swinging the lever 28 connected with this lever, against the bar 19 below it, and forcing the jaw 15 carried by the latter downwardly against the sheet, the member 30, operated as stated, when released from the grasp of the operator, sliding into engagement at its bifurcated portion 35 with the lever 29 so operated.

When the sheet 13 is to be readjusted for presenting new portions thereof to the punch-device, the operator may release from the sheet all of the clamping devices by swinging the lever 24 upwardly to swing all of the rollers 28 to raised position, as represented in dotted lines in Fig. 4, thus freeing the sheet and permitting it to be moved at will. When the sheet has been readjusted, as stated, the operator, by swinging the lever 24 forwardly and downwardly, moves all of the rollers 28 against the cooperating bars 19, thereby forcing the jaws 15 into clamping engagement with the sheet.

By employing rollers 28 rolling contact with the bars 19 is afforded which effectually prevents shifting of the rods 16 in their bearings while the bars 19 connected therewith are being depressed for clamping the jaws carried thereby against the sheet.

While I have illustrated and described a particular construction of sheet-clamping mechanism, I do not wish to be understood as intending to limit my invention to such construction, as the same may be variously altered and changed without departing from the spirit of my invention.

What I regard as new and desire to secure by Letters Patent is—

1. In a machine of the character set forth, the combination of a support, a sheet-clamping device adjustably mounted on said support and formed of a rigid clamp-bar and a cooperating yielding clamp-bar, and a pivotally supported member carrying a roller journaled thereon eccentric of the axis about which said last-named member rotates, said roller operating, when said last-named member is moved in one direction, to force said yielding bar into clamping position.

2. In a machine of the character set forth, the combination of a support, sheet-clamping devices adjustably mounted on said support and each formed of relatively movable sheet-clamping members, a pivotally-supported member, roller-equipped members

pivoted on said pivotally-supported member and operating to engage with said clamping members for moving them into clamping position when said pivotally-supported member is turned in one direction, and means for releasably and separately clutching said roller-equipped members to said pivotally-supported member, for the purpose set forth.

3. In a machine of the character set forth, the combination of a support, sheet-clamping devices adjustably mounted on said support and each formed of relatively movable sheet-clamping members, a pivotally-supported member, roller-equipped members pivoted on said pivotally-supported member and operating to engage at their rollers with said clamping members for moving them to clamping position when said pivotally-supported member is turned in one direction, and means connected with said pivotally-supported member for releasably and separately clutching to the latter said roller-equipped members, for the purpose set forth.

4. In a machine of the character set forth, the combination of a support, sheet-clamping devices adjustably mounted on said support and each formed of relatively-movable sheet-clamping members, a rock-shaft, roller-equipped members pivotally supported on said rock-shaft and operating to engage at their rollers with said clamping members for moving the latter to clamping position when said rock-shaft is turned in one direction, and means on said shaft for releasably and separately clutching said roller-equipped members to said shaft, for the purpose set forth.

5. In a machine of the character set forth, the combination of a support, sheet-clamping devices adjustably mounted on said support and each formed of relatively movable sheet-clamping members, a rock-shaft, members pivotally supported on said rock-shaft, rollers journaled in said last-named members eccentric of the axis upon which said members move and operating to engage with said clamping members for moving them to clamping position when said rock-shaft is turned in one direction, and means for releasably and separately clutching said roller-equipped members to said rock-shaft, for the purpose set forth.

6. In a machine of the character set forth, the combination of a support, sheet-clamping devices adjustably mounted on said support and each formed of relatively movable sheet-clamping members, a pivotally supported member, roller-equipped members pivoted on said pivotally-supported members and operating to engage at their rollers with said clamping members for moving the latter to clamping position when said pivotally-supported member is turned in one di-

rection, and means for releasably and separately clutching said roller-equipped members to said pivotally-supported member, comprising members clutched to said last-named member and movable into and out of engagement with said roller-equipped members, for the purpose set forth.

7. In a machine of the character set forth, the combination of a support, sheet-clamping devices adjustably mounted on said support and each formed of relatively-movable sheet-clamping members, a rock-shaft, roller-equipped members pivoted on said rock-shaft and operating to engage at their rollers with said clamping-members for moving the latter to clamping position when said rock-shaft is turned in one direction, and means clutched to said rock-shaft and movable thereon into and out of engagement with said roller-equipped members for releasably and separately clutching said roller-equipped members to said shaft, for the purpose set forth.

8. In a machine of the character set forth, the combination of a support, sheet-clamping devices adjustably mounted on said support and each formed of relatively-movable sheet-clamping members, a rock-shaft, roller-equipped members pivoted on said shaft and operating to engage at their rollers with said clamping members for moving the latter to clamping position when said rock-shaft is turned in one direction, and sleeves clutched to, and longitudinally movable on, said shaft and provided with means for releasably and separately clutching said roller-equipped members to said shaft, for the purpose set forth.

9. In a machine of the character set forth, the combination of a support, sheet-clamping devices adjustably mounted on said support and each formed of relatively-movable sheet-clamping members, roller-equipped means for moving said members into clamping position, and means releasably connecting said roller-equipped means together, for the purpose set forth.

10. In a machine of the character set forth, the combination of a support, sheet-clamping devices adjustably mounted on said support and each formed of relatively-movable sheet-clamping members adjustably mounted on said support, a pivotally supported member, roller-equipped members pivoted on said pivotally supported member and operating to engage at their rollers with said clamping members for moving the latter to clamping position when said pivotally supported member is turned in one direction, means for releasably and separately clutching said roller-equipped members to said pivotally supported member, comprising members movable on said last-named member into and out of engage-

ment with said roller-equipped members, and means tending to yieldingly force said clutching members into clutching position, for the purpose set forth.

11. In a machine of the character set forth, the combination of a support, sheet-clamping devices adjustably mounted on said support and each formed of relatively-movable sheet-clamping members, a rock-shaft, members pivoted on said rock-shaft and provided with rollers arranged eccentric of the axis upon which said pivoted members move, said rollers operating to engage with said clamping members for moving the latter to clamping position when said shaft is turned in one direction, sleeves clutched to, and longitudinally movable on, said shaft and operating in one position to clutch said pivoted members to the shaft, and means tending to hold said sleeves in clutching position, for the purpose set forth.

12. In a machine of the character set forth, the combination of a support, sheet-clamping devices adjustably mounted on said support and each formed of relatively movable sheet-clamping members, a pivotally supported member, roller-equipped members provided with operating levers and pivoted on said pivotally supported member and operating to engage at their rollers with said clamping members for moving the latter to clamping position when said pivotally supported member is turned in one direction, and members clutched to, and longitudinally movable on, said pivotally supported member formed with bifurcated portions adapted, when said last-named members are in one position, to straddle said levers, for the purpose set forth.

13. In a machine of the character set forth, the combination of a support, sheet-clamping devices adjustably mounted on said support and each formed of relatively movable sheet-clamping members, a pivotally supported member, roller-equipped members provided with operating levers and pivoted on said pivotally supported member and operating to engage at their rollers with said clamping members for moving the latter to clamping position when said pivotally supported member is turned in one direction, members clutched to, and longitudinally movable on, said pivotally supported member formed with bifurcated portions adapted, when said last-named members are in one position, to straddle said levers, and spring-means for yieldingly holding said last-named members in engagement with said levers, for the purpose set forth.

14. In a machine of the character set forth, the combination of a support, sheet-clamping devices adjustably mounted on said support and each formed of a rigid

clamp-bar and a coöperating yielding clamp-bar, a pivotally supported member, roller-equipped means pivoted on said pivotally supported member and operating to engage at their rollers with said yielding clamp-bars for moving them to clamping position when said pivotally supported member is turned in one direction, and means for releasably and separately clutching said roller-equipped members to said pivotally supported member, for the purpose set forth.

CHARLES E. REED.

In presence of—

J. G. ANDERSON,
R. A. SCHAEFER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
