

[54] **FOLDING MACHINE AND METHOD OF PRESSING A FOLD**

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[51] Int. Cl. **B65h 45/00**

[58] Field of Search **270/67, 68 R, 83, 270/84, 69, 78, 61**

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Primary Examiner—Robert W. Michell

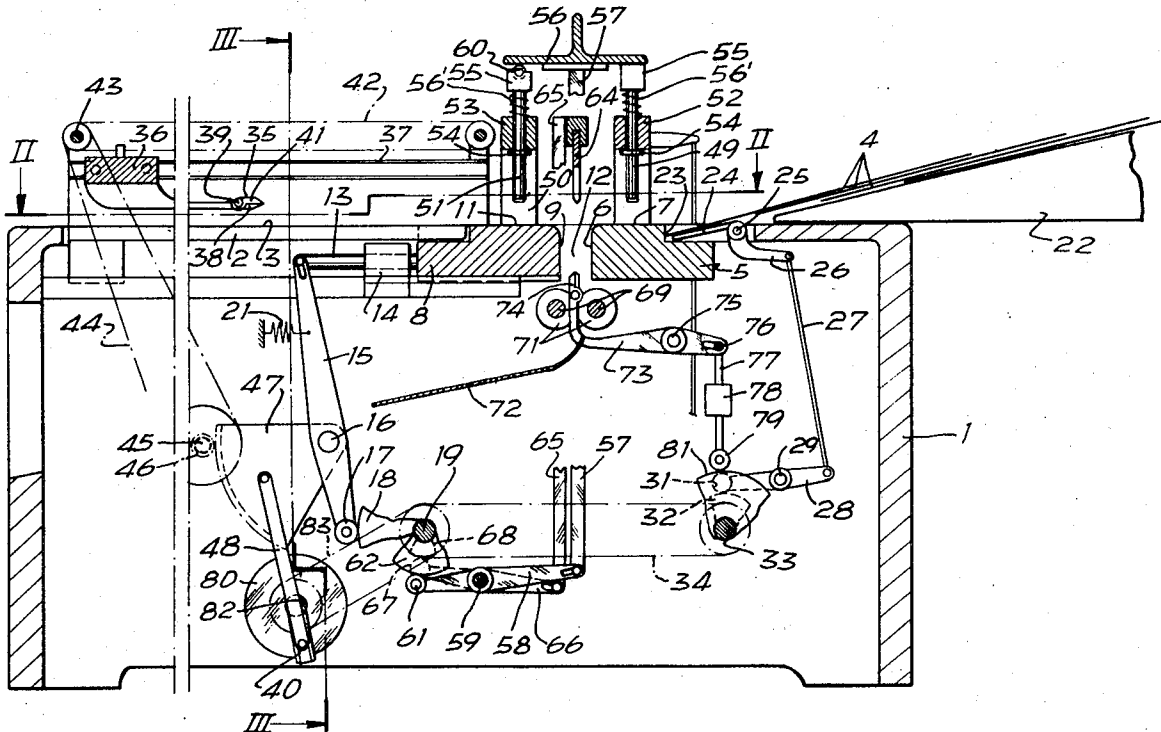
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[57] **ABSTRACT**

A folding machine comprising two pressure jaws and a method of pressing a fold into a flexible sheet material by means of these pressure jaws which are movable relative to each other and when separated define an intermediate slot, while the upper surfaces of these jaws at both sides of the slot form a part of a supporting surface for the sheet material. During the first part of the closing movement of the pressure jaws, the sheet material by being held in a fixed position on the jaws forms a loop in the slot which is then compressed into a fold when the jaws are completely closed.

7 Claims, 10 Drawing Figures



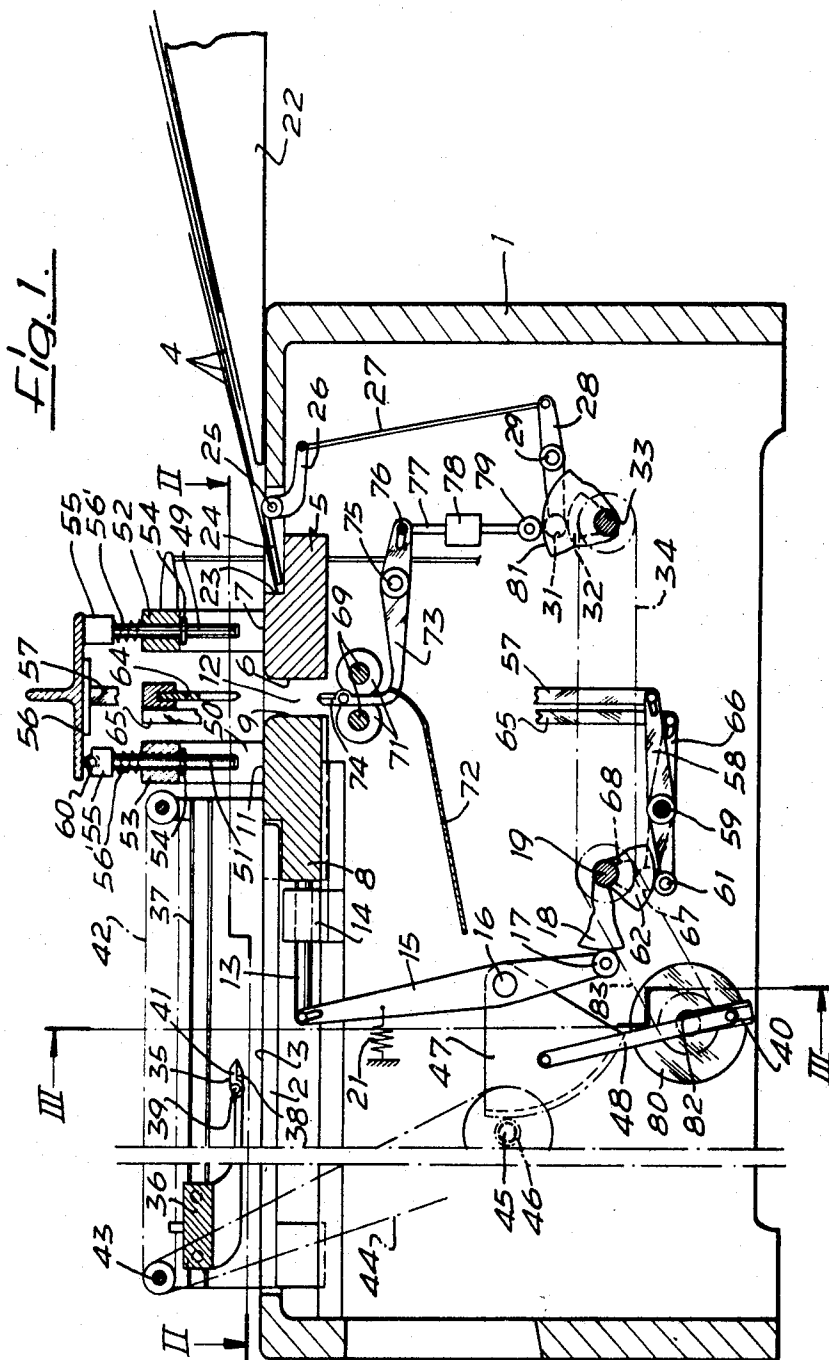
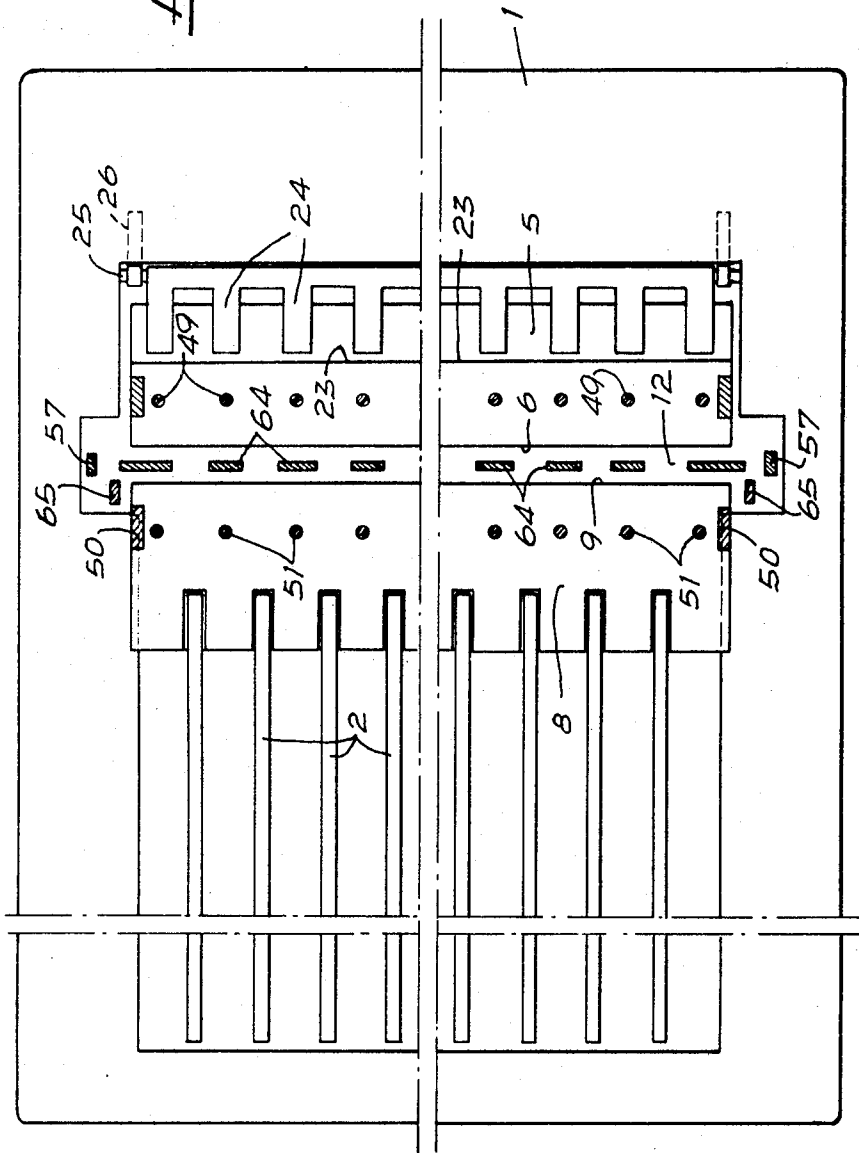


Fig 2



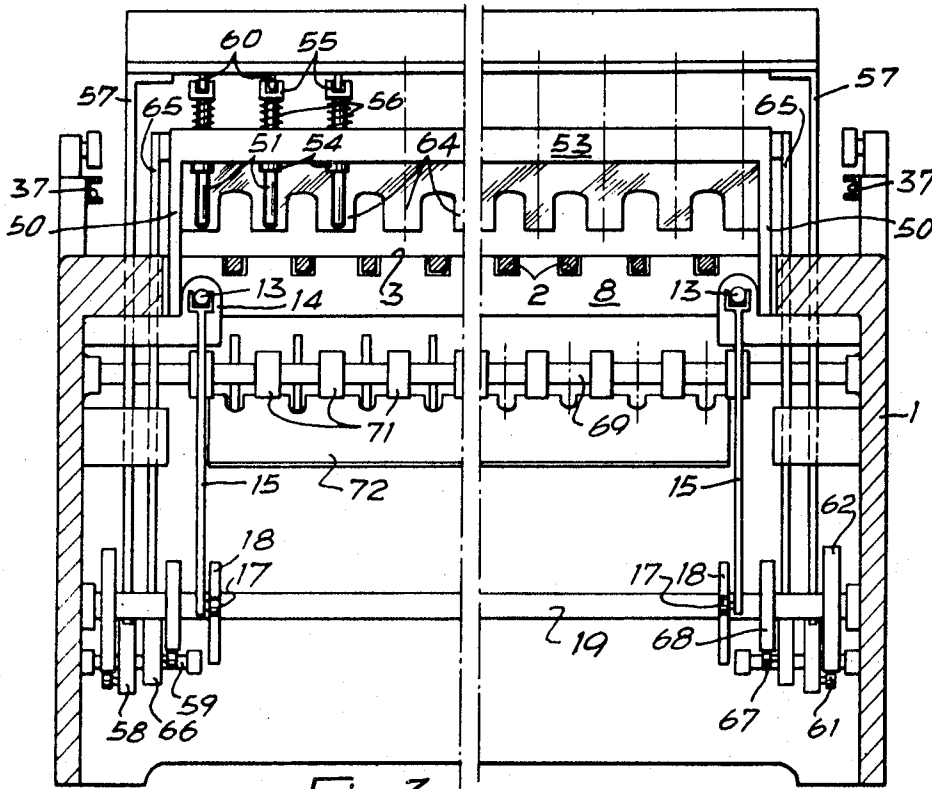


Fig. 3

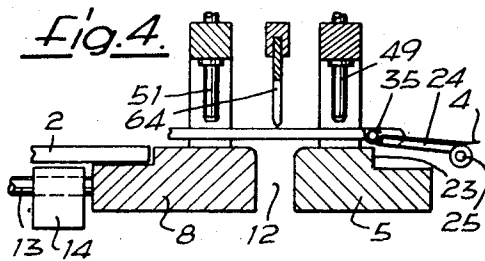


Fig. 4

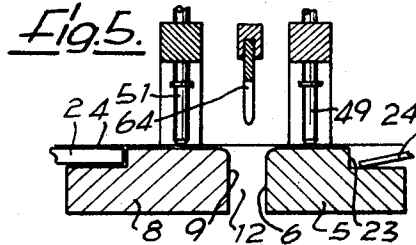


Fig. 5

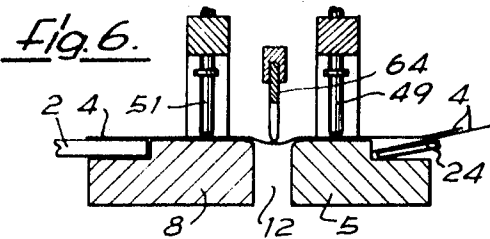


Fig. 6

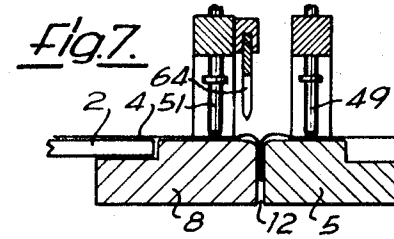


Fig. 7

Fig. 8.

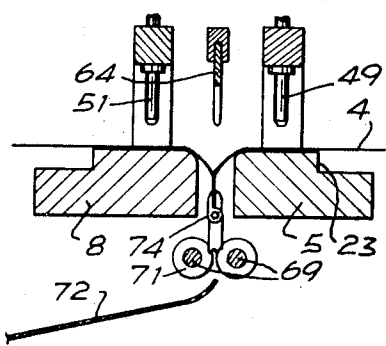


Fig. 9.

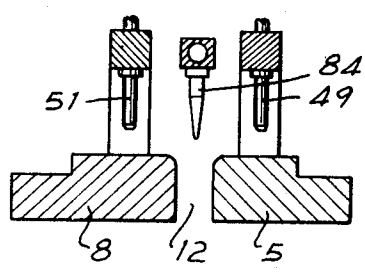
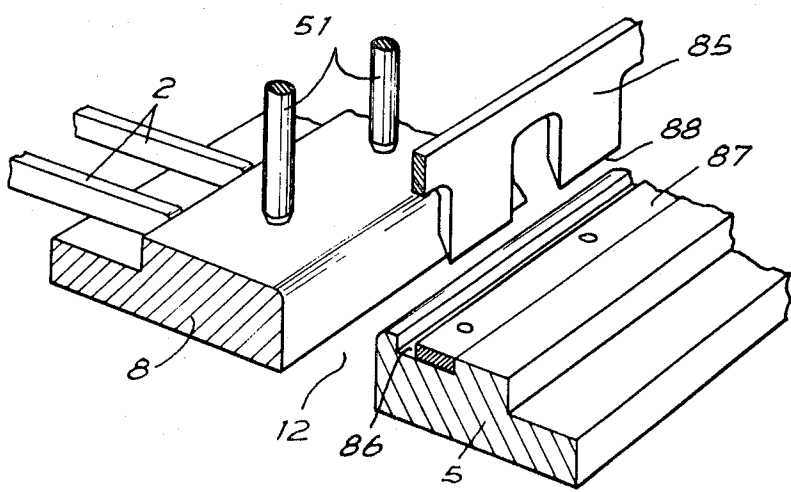


Fig. 10.



FOLDING MACHINE AND METHOD OF PRESSING A FOLD

The present invention relates to a folding machine for pressing a fold along a predetermined straight line into a flexible sheet material and to a method of pressing such folds.

There is a machine of the above-mentioned type which is known as a "cylinder-fold machine" and is provided with a pair of pressure jaws which are mounted on a first cylinder which is rotatably mounted. This first cylinder is operatively associated with a second cylinder which is provided with gripping means for gripping and feeding a sheet to be folded and with a folding blade which is adapted to act upon the sheet which is held by the gripping means so as to form a loop between the pressure jaws of the first cylinder. These gripping means and the folding blade are spaced at a certain angular distance from each other on the second cylinder so that the folds can only be formed at a certain invariable distance from the gripping means. It is therefore evident that such a cylinder-fold machine can be employed only for holding sheets of a very particular size, and it is therefore used practically only for folding newspapers or the like which have been printed on rotary printing presses which are not designed for different sheet sizes. Moreover, the construction of such a cylinder-fold machine is very expensive.

Aside from these cylinder-fold machines there are the so-called knife-fold and buckle-fold machines known in the art, in which the loop in the sheet material is formed at the folding station by means of a blade or by upsetting or buckling the sheet and by drawing the loop into the slot between two folding rollers so as to form the fold. Although these folding machines are of a more simple construction than a cylinder-fold machine as previously described, their output is considerably lower than that of a cylinder-fold machine since they first require the loop to be formed in the sheet either by means of the folding blade or by upsetting the sheet before the loop is drawn between the two folding rollers. Furthermore, the operation of these known folding machines is not very reliable since their proper function always depends upon whether or not the loop is properly gripped by the folding rollers.

It is an object of the present invention to provide a folding machine for folding a flexible sheet material of any desired size and therefore either individual sheets of different sizes or long webs of a sheet material.

Another object of the invention consists in providing a folding machine of a construction which is considerably more simple than that of a cylinder-fold machine.

Another object of the invention consists in providing a folding machine which operates at a considerably higher speed than the known knife-fold and buckle-fold machines.

A further object of the invention consists in providing a folding machine which may operate at a speed equal to that of the known automatic sheet-feeding mechanisms so that the feeding capacity of the latter may be fully utilized.

A further object of the invention consists in providing a folding machine which only requires the sheet material to be moved for a very short distance for forming a loop before the loop is compressed so as to form the fold, and which because of such a short loop permits the machine to operate at a high speed.

A further object of the invention consists in providing a folding machine which is designed so as to hold the sheet material always in a precise predetermined position during the folding operation so that even at a high operating speed of the machine there will be no danger that the fold might be improperly formed or be located in another than the predetermined position.

A further object of the invention consists in providing a folding machine which permits the sheet material to be perforated along the line along which it is thereafter to be folded.

According to the present invention, these objects are attained by providing the folding machine with a pair of pressure jaws which also form parts of the supporting surface of the sheet material to be folded, and by providing suitable means for holding the sheet material in tight engagement with the pressure jaws so that, while these jaws are moved toward each other so as to close the gap between them, the sheet material will be shifted so as to form a loop which is directed into this gap and which will then be compressed by the pressure jaws during the last part of their movement so as to form a fold.

Another object of the invention consists in providing a folding method which permits all of the aforementioned objects to be attained.

These and still further objects of the present invention as well as the features and advantages thereof will become more clearly apparent from the following description thereof which is to be read with reference to the accompanying diagrammatic drawings, in which

FIG. 1 shows a vertical longitudinal section of a folding machine according to one embodiment of the invention;

FIG. 2 shows a longitudinal section which is taken along the line II — II of FIG. 1;

FIG. 3 shows a cross section which is taken along the line III — III of FIG. 1;

FIGS. 4 to 8 show sectional views of parts of the folding machine according to FIG. 1 in different stages of its operation;

FIG. 9 shows a sectional view of parts of a folding machine according to a modification of the invention in one of the operating stages similar to those of the machine as shown in FIGS. 4 to 8; while

FIG. 10 shows a perspective view of parts of a folding machine according to a further modification of the invention which is equipped with a perforating comb.

Referring first to FIGS. 1 to 8 of the drawings, the folding machine according to the invention comprises a machine frame 1 on which a plurality of long narrow horizontal bars 2 are mounted which together form a folding table and the upper surfaces of which form a part of a supporting surface 3 for sheets of paper or other flexible sheet material which are to be folded. The machine frame 1 further carries a stationary pressure jaw 5 which is secured to this frame and has a vertical first surface 6 and a horizontal second surface 7 which is in straight alignment with the plane of the upper surfaces of the bars 2 and forms another part of the supporting surface 3. This stationary pressure jaw 5 is operatively associated with a second pressure jaw 8 which is movable horizontally relative to jaw 5 and likewise has a vertical first surface 9 and a horizontal second surface 11. When the movable pressure jaw 8 is retracted from the stationary jaw 5, their two first surfaces 6 and 9 are separated by a gap or slot 12 of a

uniform width. The second surface 11 of the pressure jaw 8 likewise forms a part of the supporting surface 3 so that the parts of this supporting surface adjacent to the slot 12 are formed by the second surfaces 7 and 11 of the pressure jaws 5 and 8. On its rear side opposite to the side forming its first surface 9, the second pressure jaw 8 is provided with two parallel rods 13 which extend at right angles to the first surface 9 and are slidable in their axial directions by being guided by the walls of bores in bearing parts 14 which are secured to the machine frame 1. The free ends of rods 13 are pivotably connected to one end of a pair of two-armed levers 15 which are pivotable about a common axis 16. The other ends of these levers 15 carry rollers 17 which are rotatably mounted thereon and engage upon the peripheral surfaces of cam plates 18 which are secured to a shaft 19 and of which only a part of one cam plate 18 is indicated in FIG. 1. During the rotation of shaft 19, the cam plates 18 reciprocate the levers 15 about the axis 16 and these levers, in turn, reciprocate the movable pressure jaw 8 between its open position as shown in FIG. 1 and its closed position in which the two first surfaces 9 and 6 of the two pressure jaws 8 and 5 engage with each other. Levers 15 are acted upon by springs 21 which tend to pivot these levers in the counterclockwise direction as shown in FIG. 1 so that the rollers 17 always remain in engagement with the rotating cam plates 18.

For feeding the sheets 4 of paper or other sheet material to a position adjacent to the end of the supporting surface 3 on the stationary jaw 5, a suitable feeder (not shown in the drawings) is provided which is adapted to feed one sheet 4 at a time from a ramp 22 up to a stop shoulder 23 which is formed by a recess in the upper surface 7 of the stationary jaw 5. Between the ramp 22 and the stop shoulder 23 a sheet lifter 24 is provided which forms a comblike plate which is pivotable about an axis 25 and the upper surface of which is substantially in alignment with the upper surface of ramp 22 when the front ends of the teeth of this plate engage upon the bottom of the recess in jaw 5. Adjacent to each of its opposite ends, the sheet lifter 24 has rigidly secured thereto a lever 26 the free outer end of which is pivotably connected to one end of a rod 27 the other end of which is pivotably connected to one end of a two-armed lever 28 which is pivotable about an axis 29 and the other end of which carries a roller 31 which engages upon the peripheral surface of a cam plate 32 which is secured to a shaft 33 which is connected by a chain drive 34 to shaft 19. When a sheet 4 which engages upon the stop shoulder 23 is to be folded, the sheet lifter 24 lifts the front edge of the sheet to a position slightly above the shoulder 23 to the upper surface 7 of the stationary pressure jaw 5 along which it is then moved by a second feeder to an exactly predetermined position on the supporting surface 3.

This second feeder comprises a row of tonglike grippers 35 which are located above the supporting surface 3 and are secured to a slide carriage 36 which is reciprocated between rails 37 in a direction parallel to the supporting surface 3 between its retracted position as illustrated in FIG. 1 and its forward position in which, as illustrated in FIG. 4, the grippers 35 may grip the front edge of the sheet 4 which has been lifted by the sheet lifter 24.

Each gripper 35 comprises a fixed jaw 38 and a second jaw 41 which is pivotable about an axis 39 and nor-

mally engages upon the fixed jaw 38 under the action of a spring, not shown. When the slide carriage 36 reaches the front and rear ends of its reciprocating movements, the pivotable jaws 41 of the grippers 35 are opened by suitable actuating means of a known type and therefore not shown in the drawings, so that when the grippers are in their forward position as shown in FIG. 4, they are opened so as to receive a sheet 4 and when they are in their retracted position as shown in FIG. 1, they are opened so as to release this sheet 4. Those actuating means for opening the grippers 35 in the retracted position as shown in FIG. 1 are mounted on a common rail (not shown) which is adjustable in the direction of travel of slide carriage 36 so as to permit the folding machine to be adjusted to sheets 4 of different lengths. The other actuating means for opening the grippers 35 in the forward position as shown in FIG. 4 are movably mounted so as to permit them to be moved out of the range of the grippers after the latter have received the front edge of a sheet 4 so that the pivotable jaws 41 of the grippers will then be closed by their spring means and thereby grip the front edge of sheet 4. The actuating means for opening the grippers 35 are also movable in the retracted position of the latter and therefore do not open these grippers until they are stopped in the retracted position and the sheet-holding means as subsequently described have moved into engagement with the sheet 4. For carrying out the opening movements of the pivotable jaws 41 of the grippers, all of the actuating means of these jaws are connected by suitable conventional means, not shown, to a cam disk, likewise not shown, which is also secured to the shaft 33 so that the movements of these actuating means occur in the proper timed relation to the operations of the other movable elements of the machine.

Slide carriage 36 is movable by means of a chain 42, one link of which is secured to this carriage. For driving the chain 42, shaft 43 of one of its sprocket wheels is connected by a chain drive 44 to a shaft 45 on which a pinion 46 is also mounted which meshes with the teeth of a gear segment 47 which is mounted so as to be rotatable about an axis 16. This gear segment 47 is, in turn, pivotably connected by a connecting rod 48 to a crank 40 which is secured to a crank disk 80 which is secured to a shaft 82. This shaft 82 is driven by a motor, not shown, and connected by a chain drive 82 to the shaft 19. The pivot pin which connects the connecting rod 48 to the crank 40 is adjustable to different positions of the length of crank 40 so as to permit the length of the strokes of slide carriage 36 to be adjusted in accordance with the length of the sheet 4 which is to be folded.

For holding the sheet 4 which rests on the supporting surface 3 in a fixed position on the second surfaces 7 and 11 of the pressure jaws 5 and 8, the machine is provided above each of the jaws 5 and 8 with sheet-holding means in the form of a row of holding pins 49 and 51, respectively, which are slidable in vertical bores in transverse bars 52 and 53, respectively, so as to be movable upwardly and downwardly. Each of the holding pins 49 and 51 is provided intermediate its ends with a flange 54 and on its upper end above the transverse bars 52 and 53 with a head 55. Between this head 55 and the bar 52 or 53 each holding pin 49 and 51 is surrounded by a spring 56' which tends to hold the respective pin in its highest position in which its flange 54

engages upon the lower side of the transverse bar 52 or 53. Bar 52 is rigidly secured to the machine frame 1, while bar 53 is rigidly secured by brackets 50 to the movable pressure jaw 8. Each transverse bar 52 and 53 therefore remains in all stages of the operation of the folding machine in the same position relative to the associated pressure jaw 5 or 8, respectively.

Above both rows of holding pins 49 and 51 a plate 56 extends both ends of which are secured to the upper ends of supporting bars 57 which are mounted in the machine frame 1 so as to be movable in the vertical direction and the lower ends of which are pivotably connected to one end of a pair of two-armed levers 58 which are pivotable about an axis 59. The other ends of levers 58 carry rotatable rollers 61 which engage upon cam plates 62 which are secured to the shaft 19. Plate 56 will therefore be moved up and down in a timed relation to the movements of the other elements of the folding machine and the holding pins 49 and 51 will thereby be moved back and forth between their raised position as shown in FIG. 1 and their sheet-holding position as shown in FIGS. 5 to 7. Since during the horizontal movements of the pressure jaw 8 the holding pins 51 move parallel to the supporting surface 3 and relative to plate 56, the upper ends of the heads 55 of the holding pins 51 are provided with rotatable rollers 60 which during this relative movement roll along the lower side of plate 56 so as to reduce the friction thereon.

Between the two transverse bars 52 and 53 and above the open slot 12 between the jaws 5 and 8 a comblike folding plate 64 is provided, the opposite ends of which are secured to the upper ends of supporting bars 65 which like the supporting bars 57 are mounted in the machine frame 1 so as to be movable upwardly and downwardly. The lower ends of these supporting bars 65 are pivotably connected to one end of a pair of two-armed levers 66 which are pivotable about the axis 59 and the other ends of which carry rollers 67 which engage under the weight of plate 56 upon cam plates 68 which are secured to the shaft 19. During the operation of the folding machine, folding plate 64 is therefore likewise moved up and down in a timed relation to the movements of the other movable elements of the machine.

Underneath the open slot 12 between the pressure jaws 5 and 8 a pair of parallel driven shafts 69 are mounted on which conveyor rollers 71 are secured which are associated in pairs with each other. By means of these rollers 71, a sheet 4 which has been looped downwardly into the slot 12 and been subsequently folded by the pressure jaws 5 and 8 and passed between these rollers 71 may be conveyed downwardly by the latter upon a guide surface 72 from which the folded sheet is then removed or passed to a conveying mechanism.

For passing a folded sheet from the slot 12 between the conveyor rollers 71 after the slot 12 has again been opened by the retraction of the movable pressure jaw 8, the machine is provided with tonglike grippers 73 which are similar to the grippers 35 and the jaws 74 of which project from below between the adjacent pairs of associated rollers 71 and the shafts 69. These grippers 73 form one of the ends of two-armed levers which are pivotable about a common axis 75 and the other ends of which are connected to each other by a transverse rod 76 the opposite ends of which are secured to

connecting rods 77 which are slidably upwardly and downwardly in a transverse bar 78 of the machine frame 1 and the lower ends of which carry rotatable rollers 79 which by the action of spring means, not shown, engage upon cam plates 81 which are secured to the shaft 33. One of the jaws 74 of each of these grippers 73 is again fixed, while the other jaw is pivotable and acted upon by a spring which tends to close this jaw. For opening the pivotable jaws of the grippers 73, suitable actuating means of a conventional type may again be provided which are operated by another crank disk, not shown, which may be secured to one of the shafts 19 or 33. The opening and closing movements of the pivotable jaws 74 may also be effected automatically by occurring simultaneously with the upward and downward pivoting movements of the two-armed levers 73 which are controlled by the cam disk 81 on shaft 33.

Since as previously mentioned the crank 40 is secured to the crank disk 80 which, in turn, is secured to the shaft 82 which is connected by the chain drive 83 to the shaft 19, and since the shaft 82 is driven by a motor, not shown, all of the movable elements of the machine which are driven by this shaft 82 via the crank drives, chain drives and cam drives as previously described are moved in certain timed relations to each other.

The course of operation of the folding machine as above described starts with the step that the feeder feeds a first sheet 4 to be folded until its front edge abuts against the stop shoulder 23 of the recess in the end of the stationary pressure jaw 5. The sheet lifter 24 then lifts the front edge of this sheet 4 to the position as shown in FIG. 4. During this movement of the sheet lifter 24 the slide carriage 36 moves forwardly so that the grippers 35 will pass underneath the holding pins 49 and 51 and the retracted folding plate 64 up to the comblike sheet lifter 24 and then grip the front edge of the sheet 4 in the gaps between the adjacent teeth of this lifter 24. Immediately thereafter, the grippers 35 move back and draw the sheet 4 upon and along the supporting surface 3. Near the end of this movement of the grippers 35, the speed of slide carriage 36 is retarded due to the fact that the slide carriage is driven by means of the crank 40. As soon as the grippers 35 have reached their rear end position, plate 56 moves downwardly and presses the holding pins 49 and 51 upon the sheet 4 which are thereby clamped tightly upon the pressure jaws 5 and 8. Thereupon the rear actuating means of the pivotable jaws of grippers 35 open these jaws. Substantially at the same time the folding plate 64 starts to move downwardly and as soon as it touches the sheet 4, the movable pressure jaw 8 starts to move in the direction toward the stationary pressure jaw 5 and takes along the holding pin 51 and the part of the sheet 4 which is clamped by this holding pin upon the upper surface of pressure jaw 8. This occurs at the instant which is illustrated in FIG. 6. Due to this forward movement of the pressure jaw 8 together with the holding pin 51 and the simultaneous downward movement of the folding plate 64 which presses the unsupported part of the sheet 4 into the decreasing slot 12 between the surfaces 6 and 9 of the pressure jaws, a loop is formed in this part of the sheet. Shortly before the movable pressure jaw 8 reaches a position closely adjacent to the folding plate 64, the latter is quickly withdrawn from the loop in the remainder of the slot 12. Directly thereafter, the pressure jaw 8 moves to its

end position, thereby closes the slot 12 completely, and compresses the loop into a sharply creased fold in the manner as illustrated in FIG. 7. The pressure jaw 8 then moves back to a substantially half-open position so that, due to the elasticity of the paper or other sheet material, the fold which has been formed in the sheet 4 is moved substantially to the center of the half-opened slot 12. Simultaneously with the opening movement of the pressure jaw 8, the grippers 73 start to pivot upwardly so that their jaws 74 will grip the folded edge of the sheet 4 substantially when the slot 12 reaches its half-open position. As soon as the gripper jaws 74 have gripped the folded sheet 4, the holding pins 49 and 51 release the sheet and the pressure jaw 8 moves at the same time back to its fully open position, as illustrated in FIG. 8, and the gripper jaws 74 move back to their original positions and thereby draw the folded edge of the sheet between the conveyor rollers 71 which rotate continuously and convey the folded sheet which has been released from the gripper jaws 74 upon the guide surface 72 from which the folded sheet may then be removed in a conventional manner.

From the foregoing description it is evident that the same continuous movement of the pressure jaw 8 which is required for forming the loop also serves for compressing this loop so as to fold and crease the sheet. During the first part of this movement, the folding plate 64 only needs to carry out a short auxiliary movement which does not interfere with the movement of the pressure jaw 8 and does not extend the length of time which the latter requires to form the fold. Consequently, the entire formation of the fold may be carried out very quickly. Since during the entire formation of the fold, the sheet is clamped by the holding pins 49 and 51 tightly upon the pressure jaws 5 and 8, the fold will be formed accurately along a line of the sheet which may be exactly predetermined. For feeding the sheet before being folded along the supporting surface 3 and to the proper position thereon and for withdrawing the folded sheet from the slot 12, well-known gripping means are employed which operate very quickly and reliably and, in cooperation with the other functions of the machine, insure that the entire operation of this machine will occur very quickly and with excellent results. Since all of the movable elements of the folding machine are mechanically connected to each other, their movements always occur in proper timed relations to each other so that interferences in the continuous operation of the machine will be prevented as much as possible. From the foregoing description it is evident that it is the particular advantage of the folding machine according to the invention that all sheet-moving and sheet-holding elements may be controlled in such a manner that, before the elements which first act upon the sheet will release the latter, the next-following elements will grip the sheet, and that therefore the operations of holding the sheet and moving the same occur at a high degree of accuracy.

FIG. 9 illustrates a modification of the invention, in which the means for assisting in the formation of a loop in the sheet to be folded within the slot 12 between the pressure jaws consist in place of a vertically movable folding plate 64 of compressed-air nozzles 84 through which during the formation of a loop a current of compressed air is directed upon the part of the sheet above the slot 12 so that this part which is upset as the result of the movement of the pressure jaw 8 together with

the holding pin 51 will be pressed into the slot 12 and form a loop therein in a similar manner as effected in the embodiment of the invention as previously described by the mechanical movement of the folding plate 64.

FIG. 10 illustrates a further embodiment of the invention in which in addition to the means as previously described with reference to FIGS. 1 to 9 a perforating comb 85 is provided which is operatively associated with the stationary pressure jaw 5 and extends parallel to the slot 12. This perforating comb 85 is movably mounted in the machine frame 1 for vertical reciprocating movements and is driven similarly as, for example, the folding plate 64, by the common driving means through cam-controlled means. Underneath this perforating comb 85 a groove 86 of the rectangular cross section is provided in the upper side of the stationary pressure jaw and parallel to the slot 12. A part of the cross-section of this groove 86 is filled out by a cutting bar 87 which is secured to the pressure jaw 5 and the free edge of which is associated with the cutting edges 88 of the perforating comb 85 so as to produce perforations in the sheet to be folded near the end of the downward movement of the perforating comb. For the operation of a folding machine according to the invention which is provided with such a perforating mechanism, the movements of the slide carriage 36 for the grippers 35 are controlled in such a manner that shortly before these grippers release the sheet to be folded, the slide carriage will be stopped so that the grippers 35 will hold the sheet in a position in which the straight line along which the sheet will thereafter be folded will lie directly underneath the cutting edges 88 of the perforating comb. The perforating comb 85 is then moved downwardly and perforates the sheet exactly along the line on which it is subsequently folded. Immediately thereafter the perforating comb 85 is again lifted off the pressure jaw 5, whereupon the sheet to be folded is moved to its final position on the supporting surface 3. The subsequent operations of the machine then proceed in the same manner as previously described. Since the cutting edge of the cutting bar 87 precedes the groove 86 into which the cutting edges 88 of the perforating comb enter during the perforating operation, the cutting edge of the cutting bar 87 will not be worn when the sheet 4 is subsequently drawn through the slot 12.

While in each folding machine according to the invention as previously described on pressure jaw 5 is mounted in a fixed position in the machine frame and the other pressure jaw 8 is movable in a direction parallel to the supporting surface 3, another preferred embodiment of the invention provides that both pressure jaws 5 and 8 are mounted so as to be equally movable in opposite directions to each other. In this case, the transverse bar 52 which supports the holding pin 49 is likewise rigidly connected to the pressure jaw 5 which is then movable, so that no relative movement can ever occur between either of the transverse supporting bars 52 and 53 of the holding pins 49 and 51 and the associated pressure jaw 5 or 8, respectively.

In place of the compressed air nozzles 84 as illustrated in FIG. 9 it is also possible to provide other pneumatic means for forming the loop in the slot 12 either by compressed air or by suction.

Although my invention has been illustrated and described with reference to the preferred embodiments

thereof, I wish to have it understood that it is in no way limited to the details of such embodiments but is capable of numerous modifications within the scope of the appended claims.

Having thus fully disclosed my invention, what I claim is:

1. A folding machine for pressing a fold along a predetermined straight line into a sheet material, comprising a machine frame, supporting means in said frame for forming a supporting surface for said sheet material, conveying means for conveying said sheet material to a predetermined position on said supporting surface, at least a first pressure jaw, and a second pressure jaw both being arranged beneath said supporting surface movable relative to each other and each having a first and a second surface and arranged so that, when said pressure jaws are separated from each other, said first surfaces define a pressure slot extending along both sides of said straight line and adapted to receive a loop of said sheet material, said second surfaces of said pressure jaws forming parts of said supporting surface adjacent to said pressure slot, means mounting at least the first pressure jaw for reciprocating movements parallel to said supporting surface relative to the second pressure jaw between an open position and a closed position of said jaws and for thereby closing and opening said pressure slot, means for influencing the formation of said loop so that said loop will be formed within said pressure slot, holding means for holding said sheet material tightly on said second surfaces of said pressure jaws so that when at least the first pressure jaw moves from its open position to a position near its closed position, driving means for actuating all of said movable means including said conveying means, said holding means, and at least said first pressure jaw and for thereafter returning the same to their original positions, so that when said sheet material is placed by said conveying means in said predetermined position on said supporting surface, it will be held by said holding means tightly on said second surfaces of said pressure jaws, whereupon said pressure slot is closed by the closing movement of at least said first pressure jaw and the loop formed during said closing movement in said pressure slot is compressed to form the fold, whereupon by the movement of said pressure jaw from its closed position to an at least partly open position, the sheet material in folded condition is released by said holding means from said jaws to permit it to be removed from said machine, gripping means, means for mounting said gripping means so as to be movable back and forth between a first position, in which they are located outside of said pressure slot and beneath said second surfaces of said jaws, and a gripping position in which said gripping means are moved into said pressure slot, and means for operatively connecting said gripping means to said driving means so that, when said pressure slot is at least partly opened after said sheet material has been folded between said first surfaces of said pressure jaws, said gripping means after said sheet material has been released by said holding means withdrawing said folded sheet material through said slot.

2. A folding machine as defined in claim 1, in which said means for influencing said loop formation comprising pneumatic means adapted to be actuated by

said driving means.

3. A folding machine as defined in claim 1, in which said means for influencing said loop formation comprising at least one element located above said pressure slot.

4. A folding machine as defined in claim 3, further comprising means for mounting said element so as to be movable substantially vertically to said supporting surface into and out of said pressure slot, and means for connecting said element to said driving means so as to be moved thereby.

5. A folding machine as defined in claim 1, in which said holding means comprise at least one holding element, associated with each of said pressure jaws, and further comprising bearing means in which said holding elements are movably mounted above said second surfaces of said pressure jaws for reciprocating movements between an inactive position in which said holding elements are spaced from said second surfaces, and an operative position in which said holding elements engage with pressure upon the parts of said sheet material disposed on said second surfaces, and means for connecting said bearing means associated with the holding element above said second surface of said first pressure jaw to said first pressure jaw so as to reciprocate said movable pressure jaw and said holding element together.

6. A folding machine as defined in claim 1, further comprising a perforating comb operatively associated with one of said pressure jaws, and means for operatively connecting said perforating comb with said driving means so that before said sheet material is located in said predetermined position on said supporting surface, said perforating comb will produce a line of perforations in said sheet material along said predetermined straight line of said material along which said fold is subsequently formed.

7. A method of producing a folded sheet material, comprising the steps of placing said sheet material in a predetermined position upon a supporting surface of a pair of pressure jaws, holding said sheet material in tight engagement with a pair of holding means on the surface of said jaws forming a part of said supporting surface, said pressure jaws in an open position being separated by a pressure slot, maintaining the pressure jaws in a fixed open position and while the jaws are stationary, lowering a folding plate against the sheet material generally centrally of the span thereof extending across the pressure slot, moving said pressure jaws from said open position toward each other when said folding plate is lowered towards said sheet material, and only after the folding plate has been raised out of the gap completing the movement of said pressure jaws from said open position toward each other to close said pressure slot and thereby forming a loop in said material by pressing said pressure jaws against each other so as to close said pressure slot and compress said loop into a fold, opening the pressure jaws following the compressing of the loop into a fold, thereafter engaging the fold by gripping means inserted between the open pressure jaws from below, and lowering the gripping means and the folded sheet material to remove the sheet material from between the pressure jaws.

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