(No Model.) 5 Sheets—Sheet 1.

A. T. BASCOM.

NEWSPAPER FOLDING MACHINE.

No. 368,805. Patented Aug. 23, 1887.

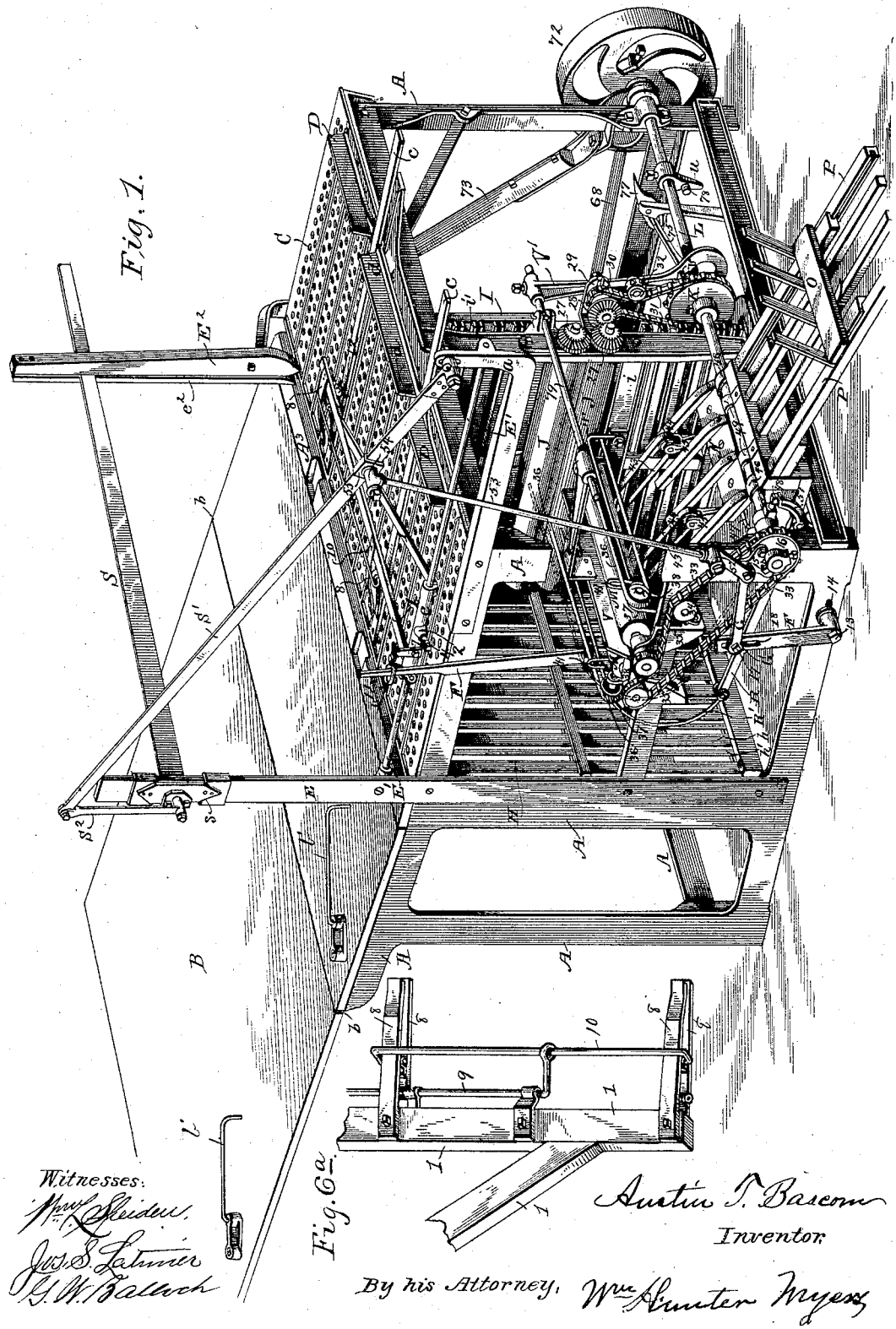


Fig. 1.

Fig. 6a.

Witnesses:
Wm. L. Sheiden.
Jos. S. Latimer
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(No Model.) 5 Sheets—Sheet 2.

A. T. BASCOM.

NEWSPAPER FOLDING MACHINE.

No. 368,805. Patented Aug. 23, 1887.

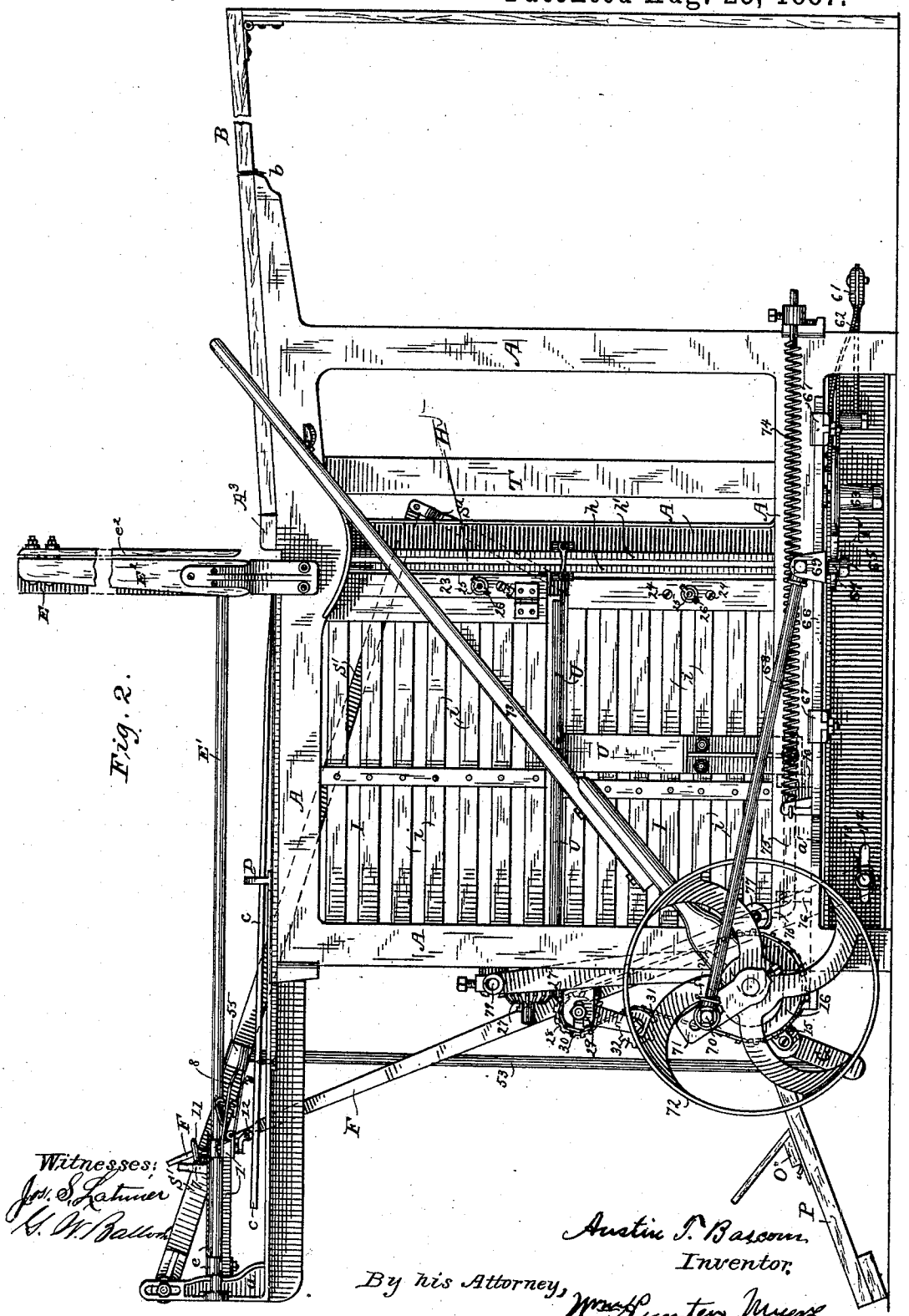


Fig. 2.

Witnesses:
Jos. S. Latimer
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(No Model.) 5 Sheets—Sheet 3.

A. T. BASCOM.

NEWSPAPER FOLDING MACHINE.

No. 368,805. Patented Aug. 23, 1887.

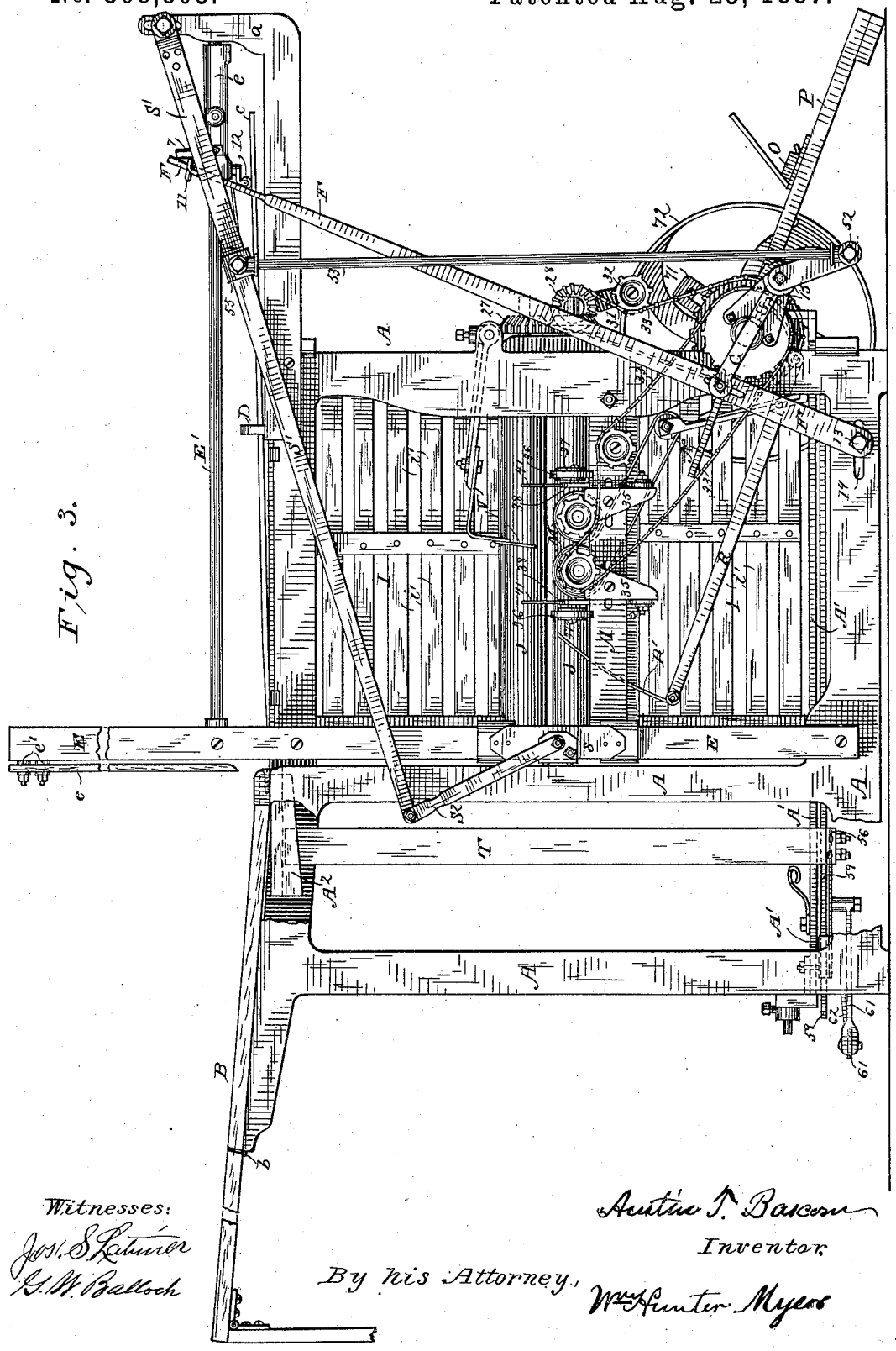


Fig. 3.

Witnesses:
Jos. S. Latimer
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(No Model.) 5 Sheets—Sheet 4.

A. T. BASCOM.

NEWSPAPER FOLDING MACHINE.

No. 368,805. Patented Aug. 23, 1887.

Fig. 4.

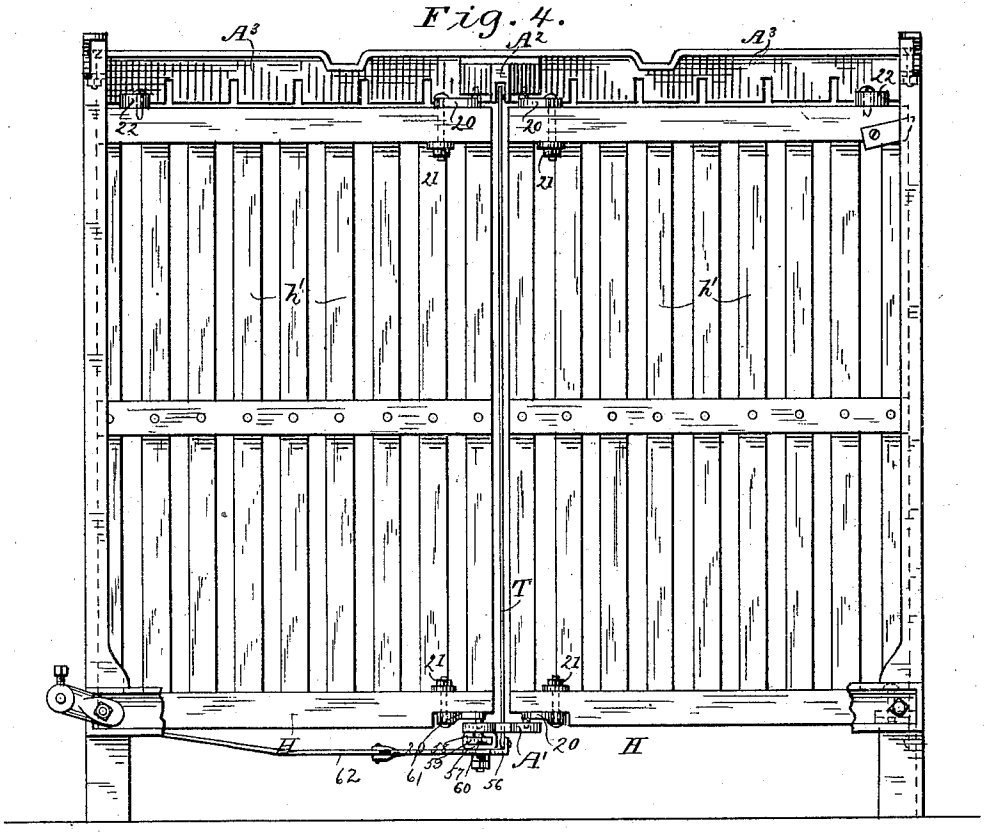


Fig. 5.

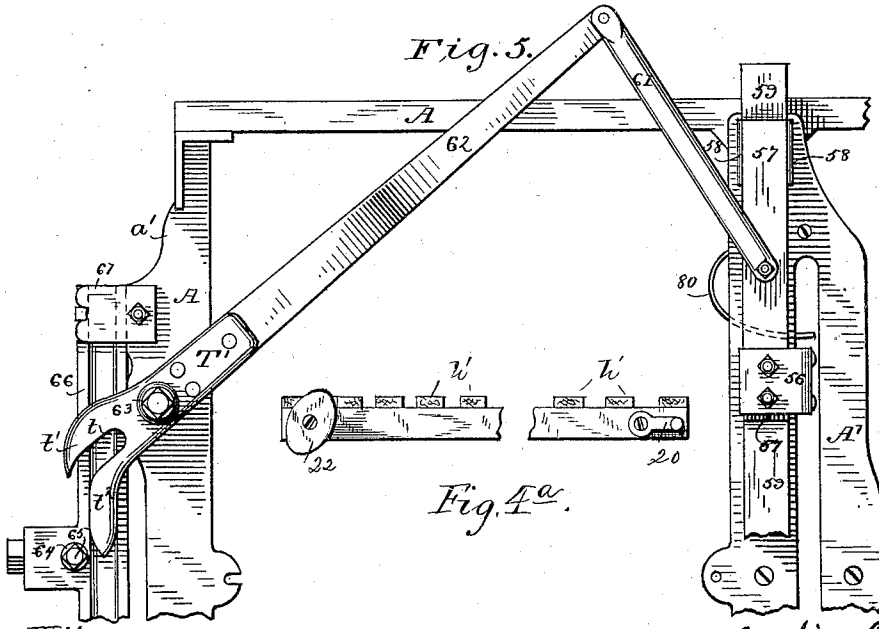


Fig. 4a.

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(No Model.) 5 Sheets—Sheet 5.

A. T. BASCOM.

NEWSPAPER FOLDING MACHINE.

No. 368,805. Patented Aug. 23, 1887.

Fig. 6.

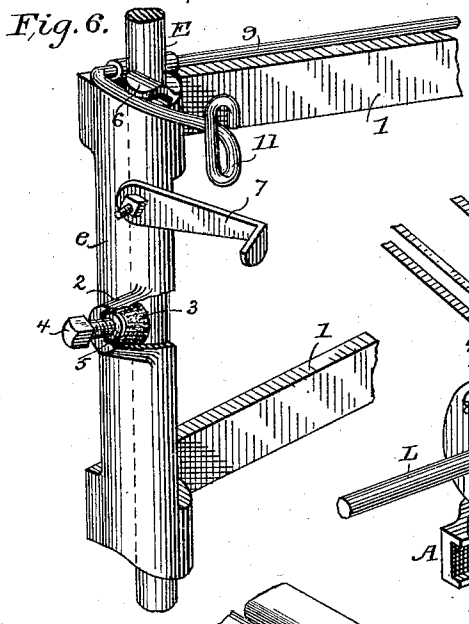


Fig. 8.

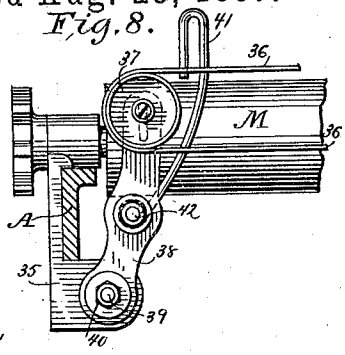


Fig. 9.

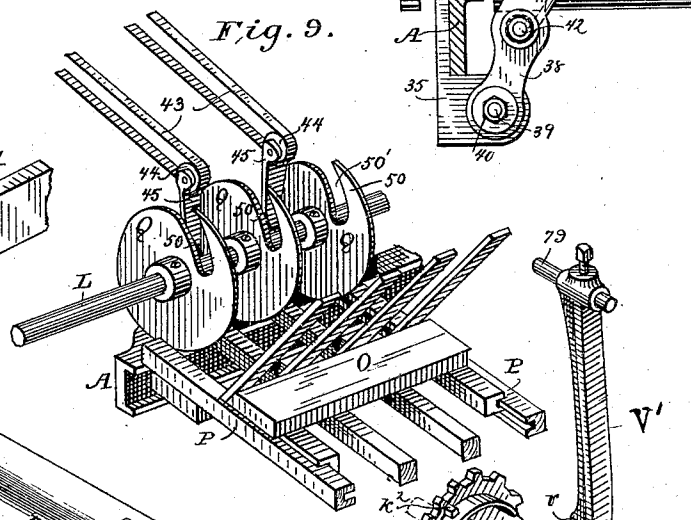
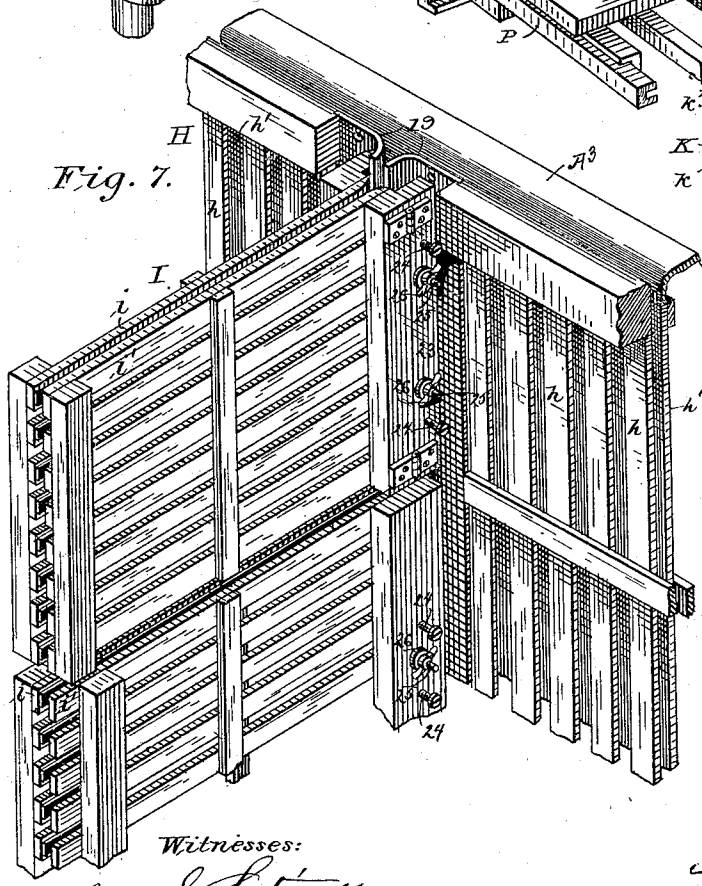


Fig. 7.



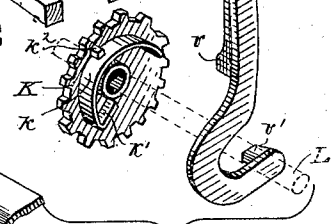
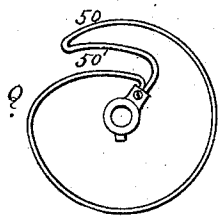


Fig. 11.

Fig. 10.



Witnesses:

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G. W. Pallock

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Inventor.

By his Attorney

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N. PETERS. Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

AUSTIN T. BASCOM, OF SIDNEY, OHIO, ASSIGNOR OF ONE-HALF TO JOHN W. SKILLEN, OF SAME PLACE.

NEWSPAPER-FOLDING MACHINE.

SPECIFICATION forming part of Letters Patent No. 368,805, dated August 23, 1887.

Application filed January 27, 1887. Serial No. 225,630. (No model.)

To all whom it may concern:

Be it known that I, AUSTIN T. BASCOM, a citizen of the United States of America, residing at Sidney, in the county of Shelby and State of Ohio, have invented certain new and useful Improvements in Newspaper-Folding Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to improvements in newspaper-folding machines; and it consists in certain novel features of construction, which will first be described in connection with the accompanying drawings, and then clearly pointed out in the claims.

Referring to the drawings, Figure 1 is a perspective view of the machine, the gripper-operating lever and a portion of the frame being broken out. Fig. 2 is an elevation of one side of the machine, and Fig. 3 is an elevation of the opposite side. Fig. 4 is a rear elevation of the first-fold receiver, showing the manner of its adjustment. Fig. 4ª is a broken top view of one of the frames *h'*, showing the adjusting-cam and pivot-hinge. Fig. 5 is an inverted plan view showing the mechanism that operates the first-fold blade. Fig. 6 is a perspective view of a portion of the gripper mechanism, partly broken out to show the friction device. Fig. 6ª is a perspective view of a portion of the gripper mechanism. Fig. 7 is a perspective view of so much of the first and second fold-receivers as is necessary to illustrate the manner of adjusting the latter. Fig. 8 is a detail elevation illustrating the manner of adjusting the tape-rolls and paper-stops. Fig. 9 is a detail perspective view showing the delivery-disks arranged on the driving-shaft and in position to receive the folded paper from the delivery-tapes and place it against the racks. Fig. 10 is a plan view illustrating a modified construction of the delivery-disks. Fig. 11 is a detail perspective of the mechanism that operates the fourth-fold blade.

In the accompanying drawings, A represents the frame-work of the machine, preferably of iron.

B represents the feed-board, hinged at *b* and provided with the usual side guides, *b'*.

C represents the top plate of the machine, made of iron and perforated throughout its entire surface, in order to prevent air from gathering under the paper as the latter is drawn toward the gage, and *c* indicates two strips of wood or other suitable material secured to the top plate, over which the paper is drawn, one of said strips serving as a track for the caster supporting the outer end of the gripper-frame, as shown in Fig. 1.

D is the paper-gage, adjustable on the top plate of the machine and having openings, as at *d*, for strips *c* to lie in, and to permit the passage of the grippers, the gripper-frame in its forward and backward movements passing over the top of the gage.

E is an upright bar, preferably of wrought-iron, bolted to the frame-work, for a purpose hereinafter stated, and E' is a horizontal rod, secured at one end to bar E and at the other end to a right-angular extension, *a*, of the frame.

The gripper mechanism consists of a light wooden frame, 1, attached at one end to a concave metallic slide, *e*, secured on rod E', so as to move freely thereon. The slide is provided about centrally with a tubular extension, 2, in which is placed loosely cork or other like frictional material, 3, and a set-screw, 4, with a metallic disk, 5, interposed between the end of the screw and the cork, to prevent the former from pressing into the latter. The slide *e* has a hooked projection, 6, at one end, and a short distance in rear of said projection it is provided with a short standard, 7, capable of being inclined from a vertical position, the top of this standard being bent outward at a right angle. The grippers 8 are constructed preferably of spring-steel, their upper jaws being secured to the upper side of frame 1. The outer lower jaw is hinged to the lower side of said frame, and the other lower jaw is hinged to a rod, 9, attached to frame 1 in such manner as to rock freely. The outer end of this rod is bent forward at a right angle and engages midway between the grippers with another rod, 10, connecting the lower jaws, as seen in Figs. 1 and 6ª, whereby the movement of said jaws is equalized—that is to say, the jaws are caused to open and close simultaneously and grip the paper with equal firmness. The inner end of rod 9 is bent upward and formed into an elongated loop, 11, at its top, the forward rock of rod 9 and consequent

strain on the grippers being limited by the hooked projection on the slide, as will be apparent. The outer end of the gripper-frame is supported by a caster, 12.

F represents a lever for giving motion to the gripper mechanism. The lower end of this lever is pivoted on a bolt, 13, adjustable in a slot, 14, in the lower side rail of the machine-frame, and its upper end passes through the loop 11 on rod 9 of the gripper mechanism. Motion is imparted to this lever by means of a connecting-rod, G, one end of which is journaled on a wrist-pin, 15, secured to a sprocket-wheel, 16, on the main shaft, the other end being secured by a bolt, 17, adjustable in a slot, 18, in lever F. By this construction the gripper mechanism can be given sufficient travel for the largest-sized newspaper, and its rearward movement can also be limited for paper of a smaller size, thus avoiding any unnecessary travel, for it will be observed that if I wish to shorten the rearward movement of the gripper mechanism I can do so by simply raising the bolt 17 in slot 18 of lever F; but this adjustment alone would also shorten its forward movement. This difficulty is overcome, however, by the adjustability of the lower end of lever F.

The upper end of lever F passes through loop 11 on rod 9, and as the lever is moved rearward or from the feed-board it bears against the rear end of the loop, rocking rod 9, closing the grippers, and moving the gripper mechanism. The lever thus acts directly on the loop until the former has assumed an angle sufficient to come into contact with standard 7, when the pressure will be gradually transferred from the loop to the standard. When the loop has been thus released from pressure, the bite of the grippers on the paper will be so slight that when the leading edge of the sheet strikes against the gage D the grippers will be drawn from the sheet. In Figs. 2 and 3 the gripper mechanism is shown in its extreme rearward position. Now, on further rotation of the main shaft the upper end of lever F will be moved in the opposite direction and bear against the forward end of loop 11, which will rock rod 9 forward and open the grippers, and they will remain open during their forward travel and until they take the sheet, by which time lever F will have been started to the rear, thus closing the grippers, and so on. The standard may be given any desired inclination, so as to engage with the lever sooner or later, as will be apparent. In the forward movement of the gripper mechanism the power of the lever will be exerted on the front end of the loop; but the forward rock of rod 9 will be limited by the engagement of its upwardly-bent portion with the hooked projection 6 on slide *e*. The grip or bite of the grippers is governed by the power necessarily exerted on the loop to move the gripper mechanism, and this power in turn is governed by the freedom with which the slide moves on rod E′. If a firm grip is necessary, as when working heavy paper, set-screw 4 is turned so as to press the cork or other frictional material against rod E′, and vice versa.

H represents the first-fold receiver (in which the first fold of the paper is made) located transversely of the machine. It consists of two sets of light slat-frames, *h h′*, the frames *h* at the center abutting against and lying flush with two inturned rounded iron posts, 19, (see Fig. 7,) rising from a slotted plate, A′, extending longitudinally of the machine-frame at the bottom and forming part of the same, the said frames being secured in place at the top by screws passing through the top plate, and at the bottom by dowel-pins entering lugs on plate A′, and also on the side rails of the machine-frame. The other frames, *h′*, of this receiver are set facing the frames *h*, and are made adjustable closer to or farther from them, in order to narrow or widen the passage-way for the paper, in the following manner: To plate A′, on either side of its slot, the frames *h′* are attached at bottom by means of pivot-hinges 20, tightened by nuts 21, Fig. 4, and at top they are hinged in like manner to any suitable projection on the machine-frame or to a kerfed piece, A^2, (best seen in Fig. 3,) designed to steady the top of the second-fold blade until it reaches the second-fold receiver. By this construction the inner ends of the frames *h* can be adjusted as desired by simply loosening the nuts on the hinges, setting the frames, and then tightening the nuts. The outer ends of these frames are made adjustable by means of cams 22, engaging with a downwardly-extending cross-plate, A^3, of the machine-frame. Not only are the frames *h′* thus made adjustable with relation to frames *h*, but they are also capable of being swung open on their hinges, so that if a sheet should become lodged in the receiver it can be readily removed. The frames *h h′* are held together at their outer ends by any suitable device, as by a hook, Fig. 2, of proper length, or a turn-button, Fig. 4, of proper thickness. The opposing faces of the slats composing these frames are lined with felt or other suitable material to afford a frictional surface for the paper, so as to prevent it from becoming displaced as the fold-blade is withdrawn.

I represents the second-fold receiver extending longitudinally of the machine and constructed of slat-frames *i i′*, substantially like those before described. These frames are made adjustable toward and from each other, in order to regulate the width of the passage-way and to keep it central with relation to the opening from the first-fold receiver, as follows: It will be observed on referring to Fig. 7 that one of the two frames, *i′*, (the upper one,) has two uprights at one end, which are hinged together, and that one of these uprights (numbered 23) stands in front of the inturned portion of one of the rounded posts 19. Wood-screws 24 pass through this upright and bear against post 19, while bolts 25, for holding the frame in position, pass through said post, the

bolt-heads being countersunk therein, (not shown,) and also through the upright 23, and are provided with thumb-nuts 26 on their screw-threaded ends. This description applies to the upper one of the frames, *i'*, but it applies equally well to all the other frames of the second-fold receiver, with the single exception that (there being no necessity for hinging them) they have but one upright, which, however, equals in width the combined widths of the two before mentioned. Now, in order to effect the adjustment, all that is necessary is to first turn the wood-screws until the upright is carried forward or backward the proper distance and then tighten thumb-nuts 26 on bolts 25.

J represents the third-fold rolls journaled in the machine-frame parallel with the second-fold receiver, their journals passing through the frame at the front of the machine and bearing miter spur-wheels 27, which gear with a bevel-wheel, 28, the shaft of which (supported in a bracket, 29,) bears a small sprocket-wheel, 30, over which passes a drive-chain, 31, which passes round and is driven by a large sprocket-wheel, K, secured on the driving-shaft L, the tension of the chain being governed by a sprocket-tension, 32. Wheel K (for a purpose which will hereinafter appear) is provided on one side with a broad rim, *k*, Fig. 11, extending part way round the wheel, one end of said rim being turned inward at a right angle, as at *k'*, and on the outer side of the rim is a lug, k^2, about half the width of the rim.

M represents the fourth-fold rolls, journaled in the machine-frame at right angles to the third-fold rolls, and below the line of contact of said rolls. The fourth-fold rolls are driven by means of a drive-chain, 33, passing around a sprocket on the rear roll, under a sprocket on the front roll, and around sprocket-wheel 16, the chain being supported in contact with the sprocket on the front roll by means of a small sprocket, 34, journaled on the side of the machine-frame.

The folding-rolls are adjustable toward or away from each other by means of movable journal-bearings, as 35, secured by bolts passing through slots in the machine-frame, as illustrated in Fig. 3. All of the rolls are covered with felt or other suitable fabric.

Carrier-tapes 36 pass around the lower one of the third-fold rolls, and extend parallel with and in a plane slightly above the fourth-fold rolls to small pulleys 37, free to revolve on spindles adjustably mounted in slotted brackets 38, swung on bolts 39, Fig. 8, entering the journal-bearings 35, and provided with nuts 40 for tightening the brackets against the bearings. Thus the brackets may be swung forward or backward to loosen or tighten the tapes, as desired.

Stops 41, designed to arrest the paper as it is carried forward on the tapes, are swung on bolts 42 in brackets 38 in the same manner as those brackets are swung to the journal-bearings 35, and are therefore adjustable in like manner.

Other tapes, 43, leading to the delivery mechanism, pass around the rear one of the fourth-fold rolls, under the front roll, and over pulleys 44, mounted in brackets 45, adjustably bolted (not shown) to the lower rail of the machine.

N represents the fly for throwing the paper from tapes 43 against a rack, O, adapted to slide on a frame, P. The fly is hung to the driving-shaft of the machine by means of metallic straps 46, which loosely encircle said shaft in a slightly spiral direction, as seen in Fig. 1, and each of these straps bears against a stud (not seen) projecting from that side of the head-block of rack-frame P next the shaft, these studs being so situated on the head-block that the inner edges of the straps 46 will bear against them. The fly is provided near its bottom with a projecting lug, 47, with which a tappet, 48, secured to the driving-shaft, engages for throwing the fly forward. Owing to the spiral fly-straps 46 bearing against the above-mentioned fixed studs, the fly, as it is carried forward by tappet 48, is also moved longitudinally on the driving-shaft, so that lug 47 will be freed from the tappet at the proper time, allowing the fly to fall back to the tapes, it being retracted by any suitable device, as a weight or a spring. The head-block of rack-frame P has metallic bearings 49, which overlie the driving-shaft, being slightly raised above the fly-straps in order to prevent the paper from coming into contact with the latter.

The practice of working dry calendered paper is now somewhat in vogue with printers, and this has led me to devise a novel delivery admirably adapted to meet the requirements in this case. When the paper is put through the folding-machine in a dampened condition, the fly will lay it firmly against the rack, where it will remain until the succeeding sheet is laid against it; but I have found that this is not always the case with dry paper, for sometimes the folds of the paper will open and drop back onto the fly as it moves toward the tapes, thus allowing the next paper to enter between its folds. With the delivery mechanism that I am now about to describe this cannot happen, for the folded paper as it emerges from the machine is held positively against the rack until another paper is ready to be placed against it. This mechanism is constructed as follows:

Q represents a series of metal or wooden disks, usually three, each provided with a hub and formed with backwardly-extending fingers 50 and an elongated opening, 50', extending from the periphery to the hub, but in front of it, the rear wall of this opening being rounded at the top in order to allow the paper to pass freely into the opening, all as clearly seen in Fig. 9. The disks are rigidly secured to the driving-shaft of the machine, which is located about midway between the tapes and

the rack-frame, (it being understood that the fly is to be removed,) and timed so that their openings will be directly before the end of the tapes 43 just as the folded paper is ready to pass therefrom. The ends of the slats forming the rack-frame P extend forward some distance between the disks. Now, in the operation of the machine the folded paper will be directed by tapes 43 into the openings 50′ in the disks, and as the disks revolve it will be carried around until it is brought to rest by its lower edge striking on the slats of the rack-frame. Then as the disks continue to revolve their openings will gradually recede from the paper until the latter is entirely free from them, when it will fall against the rack. As soon as this occurs the peripheries of the disks will come into contact with and bear against the paper, thus holding it firmly to the rack until another paper has been delivered, and so on, as will be apparent from the drawings. The devices herein termed "disks" may also be formed of wire, bent so as to leave the elongated opening, as shown in Fig. 10.

It may be desirable sometimes to throw the paper off at the third fold, and for this purpose I employ a lever, R, pivoted to the machine-frame, and provided with a curved toe-piece, 51, with which tappet 48 on the driving-shaft engages to rock the lever. To the inner end of this lever is attached a wire throw-off, R′, bent at a right angle, so as to lie parallel with and behind the fourth-fold rolls. In using this throw-off it is only necessary to remove the fourth-fold blade, when, in the upward movement of the lever, the throw-off will lift the paper from the tapes and cant it over onto a rod, *r*, in front of and slightly below the tapes, and from this rod the paper will fall onto or into the delivery mechanism.

S represents the first-fold blade, secured at one end to a sleeve, *s*, adapted to slide freely on bar E, the free end of the blade being steadied above the receiver by means of a standard, E^2, to one edge of which is bolted a thin strip, e^2, of wood or other suitable material, washers *e′* being interposed between the strip and standard, as seen in Fig. 3. Movement is imparted to this blade by means of a lever, S′, one end of which is pivoted to an extension, *a*, of the main frame, and to the other end of the lever is pivoted one end of a link, S^2, the other end of the latter being pivoted to the sleeve *s*. Lever S′ is operated from the driving-shaft by means of wrist-pin 15, crank 52, and connecting-rod 53, the upper end of said rod being journaled on a wrist-pin, 54, which screws through one side of a movable block, 55, on the lever and bears against the latter. By this construction the travel of the folding-blade can be adjusted accurately to fold papers of different sizes. To make this adjustment I first turn the driving-shaft until the lower end of the connecting-rod 53 is in its lowest position, and then move the block 55 on the lever toward or away from the pivotal point of the same, according as it is desired to give the fold-blade a longer or shorter travel, and then tighten wrist-pin 54.

T represents the second-fold blade, attached at its bottom to a right-angularly-bent strip of metal, 56, Fig. 4. This strip is bolted to the bottom and at one end of a short sliding plate, 57, Figs. 4 and 5, the sides of which, at each end, are turned upwardly to form sleeves 58, which loosely clasp a bar, 59, bolted to the under side of slotted plate A′, washers 60 being interposed between said plate and the bar, as seen in Fig. 4. This folding-blade is operated by means of a link, 61, pivoted at one end to sliding plate 57, the other end of the link being pivoted to a lever, 62, to which is riveted a shoe, T′, pivoted on a wrist-pin, 63, secured to the flange *a′* on the side rail of the machine-frame, the shoe being recessed, as at *t*, Fig. 5, forming a heel, *t′*, and a toe, t^2, the latter being extended as shown. In the operation of the machine the shoe engages with a friction-roll, 64, Fig. 2, carried by a bolt, 65, screwed into the under side of a sliding bar, 66, free to move in ways 67, bolted to flange *a′* of the frame, as seen in Fig. 2, the under side of said bar being slightly concave to reduce friction. The sliding bar 66 is reciprocated by means of a connecting-rod, 68, journaled at one end in bearings 69, cast on the bar, and journaled at the other end on a wrist-pin, 70, adjustable in a slotted crank, 71, secured to the main shaft, the inner end of the hub of the crank being formed as a clutch to engage with a like clutch (neither of which is shown) formed on the hub of the drive-wheel 72, loosely mounted on the main shaft, but adapted to be thrown into clutch engagement with the crank by a lever, 73. A coiled spring, 74, is attached at one end to bar 66, and at the other end to the machine frame. This spring serves to equalize and steady the movements of the machine, it being so arranged as to exert its power while the first fold blade is ascending.

U represents the third-fold blade rigidly secured to one end of a rock-shaft, 75, mounted in short standards 76, rising from the main frame, as seen in dotted lines in Fig. 2. The other end of the rock-shaft, bent at a right angle, passes through one end of a short slotted lever, 77, pivoted to a standard secured to the bottom rail of the frame, which lever is operated by a tappet, *u*, rigidly secured to the driving-shaft, this tappet being provided with a laterally-projecting lug, 78.

V represents the fourth-fold blade, secured to a shaft, 79, mounted in the frame of the machine. To one end of this shaft is secured an arm, V′, formed with a hook at its lower end (see Fig. 11) and provided with a projection, *v*, on its inner side, just above the hook, and another shorter projection, *v′*, at the extreme end of the hook, the said arm engaging with the rim on wheel K.

The operation of the machine is as follows: The moving parts of the machine being in the position illustrated in Fig. 1, and power applied to the driving-shaft, the first-fold blade

will continue to rise until crank 52 is brought into a vertical position, during which time the grippers will move forward to the sheet which has been fed down by the operator. Then, when the crank moves over the center the folding-blade will begin to descend and the grippers will commence their rearward movement, thus rocking rod 9 and closing the grippers on the paper, which is drawn back until its edge is brought against gage D, (which should be set so that the middle of the sheet will lie directly over the first-fold receiver,) when the grippers will open and release the sheet. Just as the paper is brought to this position the first-fold blade strikes it and carries it down into the receiver until the center of the once-folded sheet is opposite the line of contact of the third-fold rolls, when the folding-blade will at once begin to ascend. At the instant it rises out of the receiver, (the grippers having meanwhile advanced to take another sheet,) the friction-roll 64, carried by sliding bar 66, comes into contact with the heel of the shoe T and enters the recess, thereby moving the lever 62, so as to drive the second-fold blade into its receiver, the thus twice-folded sheet being carried forward until its center is opposite the line of contact of the fourth-fold rolls. When the second-fold blade reaches the limit of its forward throw, the sliding bar 66 will commence moving in the opposite direction, which movement will carry the folding-blade out of the receiver, the blade coming to rest as soon as the wrist-pin 64 leaves the recess in the shoe. The blade being carried back very quickly, its momentum would sometimes throw the point of the heel of the shoe directly in the path of the wrist-pin; but this difficulty is avoided by a spring-wire, 80, secured to the slotted plate A′ of the frame, which causes the folding-blade to rebound slightly, which swings the top of the shoe into position to be acted on by the wrist-pin, so that by the time the latter is ready to enter the recess in the shoe the heel will be in proper position.

It may be here remarked that the shoe is an important feature in the propulsion of the second-fold blade, as by means of it the blade is allowed to stand at rest out of the receiver during half the revolution of the driving-shaft, whereby the sweep of the blade-propelling lever is considerably shortened as compared with the sweep necessary when a rack and pinion are used.

As soon as the second-fold blade has cleared the receiver, tappet *u* on the driving-shaft strikes the end of rock-arm 75 and carries it upward, lever 77 swinging with it, thus driving the third-fold blade and the twice-folded sheet between the third-fold rolls, and then when the tappet passes from under the rock-arm the lug 78 will engage with the under side of lever 76 and force the end of the rock-arm down, thereby withdrawing the blade. As the paper emerges from the third-fold rolls, it is carried by tapes 36 over the fourth-fold rolls until arrested by stops 41, when lug k^2 on the rim of wheel K comes in contact with projection *v* on arm V′, thus swinging said arm outwardly, and thereby giving the fold-blade a downward movement between the rolls. At the moment lug k^2 leaves projection *v* the inwardly-turned portion *k′* of the rim engages projection *v′* on the hook portion of the arm and swings the arm inward, thus raising the blade, the projection *v′* meanwhile reaching the curved portion of the rim and holding the blade elevated until the rim has left it, the lug k^2, not lying in the path of said projection, freely passing it. When the sheet has received its fourth fold, it is carried by tapes 43 to the delivery mechanism.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination, with the gripper-frame having the two upper jaws of the gripper rigidly secured to its upper side and one of the lower jaws hinged to its under side at its outer end, of a rocking rod attached to the front edge of the frame, and having a forward extension midway between the grippers, the other lower jaw hinged to said rod, a connecting-rod to which both lower jaws are hinged and to which is attached the forward extension of the rocking rod, and mechanism, substantially as described, for operating the rocking rod.

2. The combination, with a rod located at one side of the machine and extending longitudinally thereof, of a slide mounted on said rod and provided with an adjustable friction device for engagement with the rod, a gripper-frame secured to the slide and carrying grippers, and mechanism, substantially as described, for operating and closing the grippers and reciprocating the slide and frame.

3. The combination, with a rod located at one side of the machine and extending longitudinally thereof, of a gripper-frame and grippers constructed as above set forth, the inner end of the rocking rod being bent upward and formed into a loop, a slide, to which the gripper-frame is attached, mounted on the longitudinal rod and provided with a friction device for the purpose stated, a projection for limiting the forward movement of the rocking rod, and a standard for releasing pressure on the loop, a lever in engagement with the loop for operating the grippers and reciprocating the slide and frame, and mechanism, substantially as described, for operating the lever.

4. The combination, with a gripper mechanism constructed as above set forth, of a lever whose upper end engages with said mechanism, and whose lower end is adjustably pivoted in a slot in the machine-frame, a connecting-rod adjustably pivoted at one end in a slot in the lever above the pivotal point of the latter, and means, substantially as described, for operating the connecting-rod, whereby the gripper mechanism may be made to move rearward a greater or less distance and forward

just the proper distance to receive the sheet to be folded.

5. A fold-receiver constructed of two sets of slat-frames, one set adjustable with relation to the other and adapted to be swung open, the frames of one set being rigidly secured in the machine-frame and those of the other set pivotally hinged therein and provided with cams for regulating the width of the passage-way at the outer ends and with suitable fastening devices for the frames.

6. In a fold-receiver constructed of two sets of slat-frames adjustable toward and away from each other, the combination, with two inturned rounded posts forming part of the machine-frame, of set-screws passing through the uprights of the receiver-frames and bearing against said posts, and headed bolts passing through the posts and uprights and provided with thumb-nuts.

7. In a fold-receiver constructed of two sets of slat-frames adjustable toward and away from each other and one of the frames adapted to swing open, the combination, with an inturned rounded post forming part of the machine-frame, of an upright hinged to an upright of one of the receiver-frames, set-screws passing through the hinged upright and bearing against said post, and a headed bolt passing through the post and hinged upright and provided with a thumb-nut.

8. The combination, with the brackets supporting the tape-rolls, as above set forth, of paper-stops, as 41, the lower ends of which are swung on bolts passing through the brackets and stops and provided with tightening-nuts, the upper ends of the stops extending above the tapes, whereby the forward travel of the thrice-folded sheet may be adjusted by swinging the stop forward or backward.

9. The combination, with a lever pivoted to the main frame and provided at its pivoted end with an upwardly-curved toe-piece, of a wire throw-off attached to the inner end of the lever and bent so as to extend in rear of and longitudinally of the tapes over the fourth-fold rolls, and a tappet on the main shaft for operating the lever, for the purpose above stated.

10. The combination, with the lever 62 for operating the second-fold blade, as above set forth, of a recessed shoe having a heel and toe portion, as described, rigidly secured to the outer pivotal end of the lever, a sliding bar, 66, moving in ways attached to the main frame and bearing a friction-roll, 65, for engagement with the shoe of the lever, a spring for arresting the momentum of the blade, and mechanism, substantially as described, for reciprocating the sliding bar.

11. The combination, with the third-fold blade and a rock-arm to which said blade is rigidly secured, of a slotted lever pivoted to a standard secured to the main frame, one end of the rock-arm extending through the slot in the lever, and a tappet secured on the main shaft and provided with a lug on one side, whereby in the revolution of the shaft the tappet raises the end of the rock-shaft and throws the blade forward, and the lug raises the outer end of the lever, carrying the rock-arm down and withdrawing the blade.

12. The combination, with a fourth-fold blade and a shaft to which it is secured, of a wheel, as K, on the main shaft, having a rim, as k k', and also a lug, as k^2, on the rim, and a downwardly-extended arm, as V′, having projections, as v' v, for engaging with said rim and the lug on the rim, respectively, and thereby operating the folding-blade.

13. In a folding-machine, the combination, with the delivery-tapes and a rack-frame, and sliding rack on said frame, of a series of delivery-disks mounted on the main shaft, the said disks being formed with elongated openings, as 50′, shaped as shown and described, and adapted to receive a folded sheet from the delivery-tapes, deposit it against the rack, and press it against the same, in the manner above described.

14. In a folding-machine, the combination, with the delivery-tapes and a rack-frame, and sliding rack on said frame, of a series of delivery-disks mounted on a shaft placed about midway between the tapes and the rack-frame, the said disks being formed with backwardly-extending fingers 50 and elongated openings 50′, shaped as shown and described, and adapted to receive a folded sheet from the delivery-tapes, deposit it against the rack, and press it against the same, in the manner above described.

In testimony whereof I affix my signature in presence of two witnesses.

AUSTIN T. BASCOM.

Witnesses:

WM. H. MYERS,

G. W. BALLOCH.