Jan. 11, 1938. W. A. PRATT 2,105,372

WIRE STITCHING MACHINE

Filed June 15, 1936 6 Sheets-Sheet 1

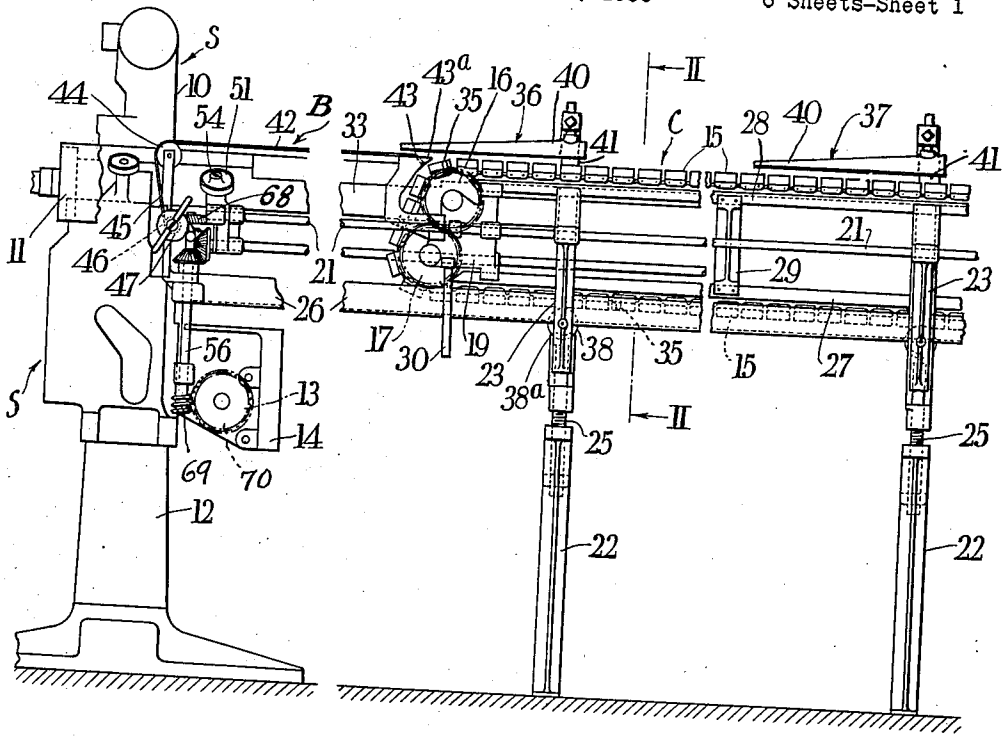

Fig. 1.

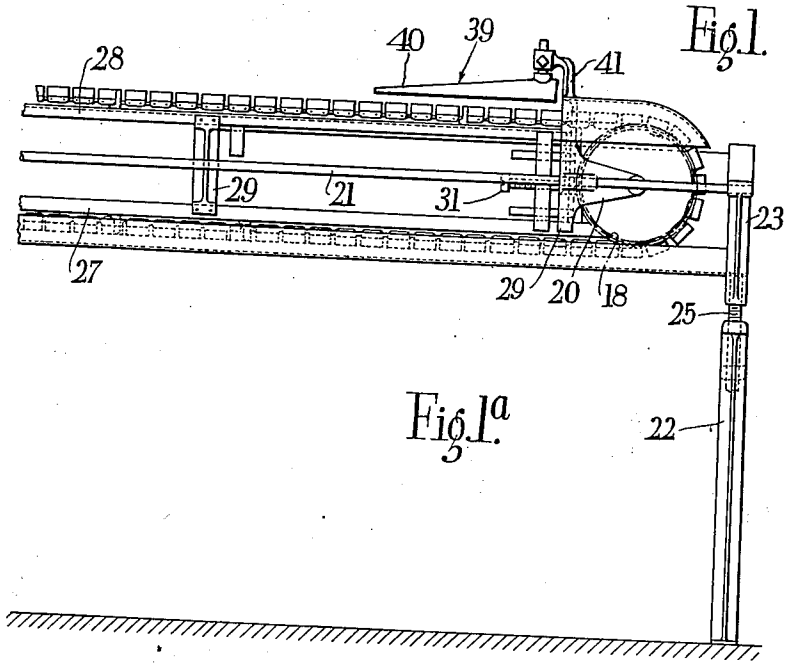

Fig. 1a.

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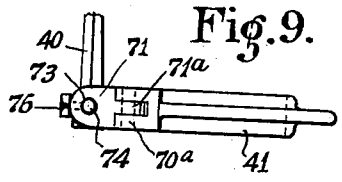

Fig. 9.

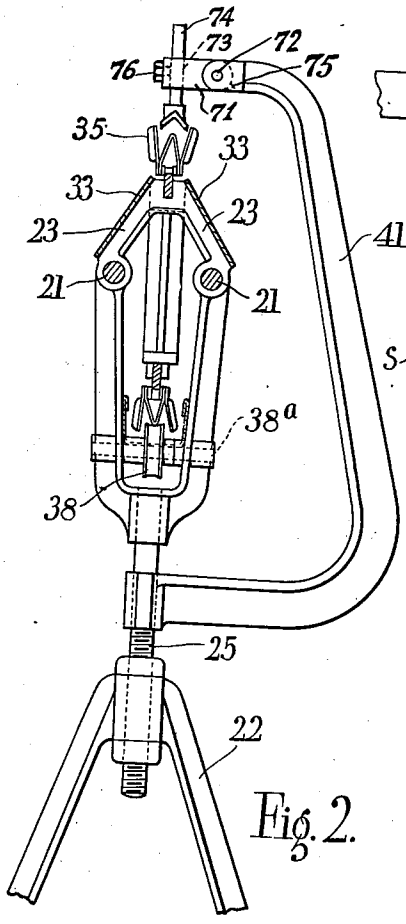

Fig. 2.

Fig. 3.

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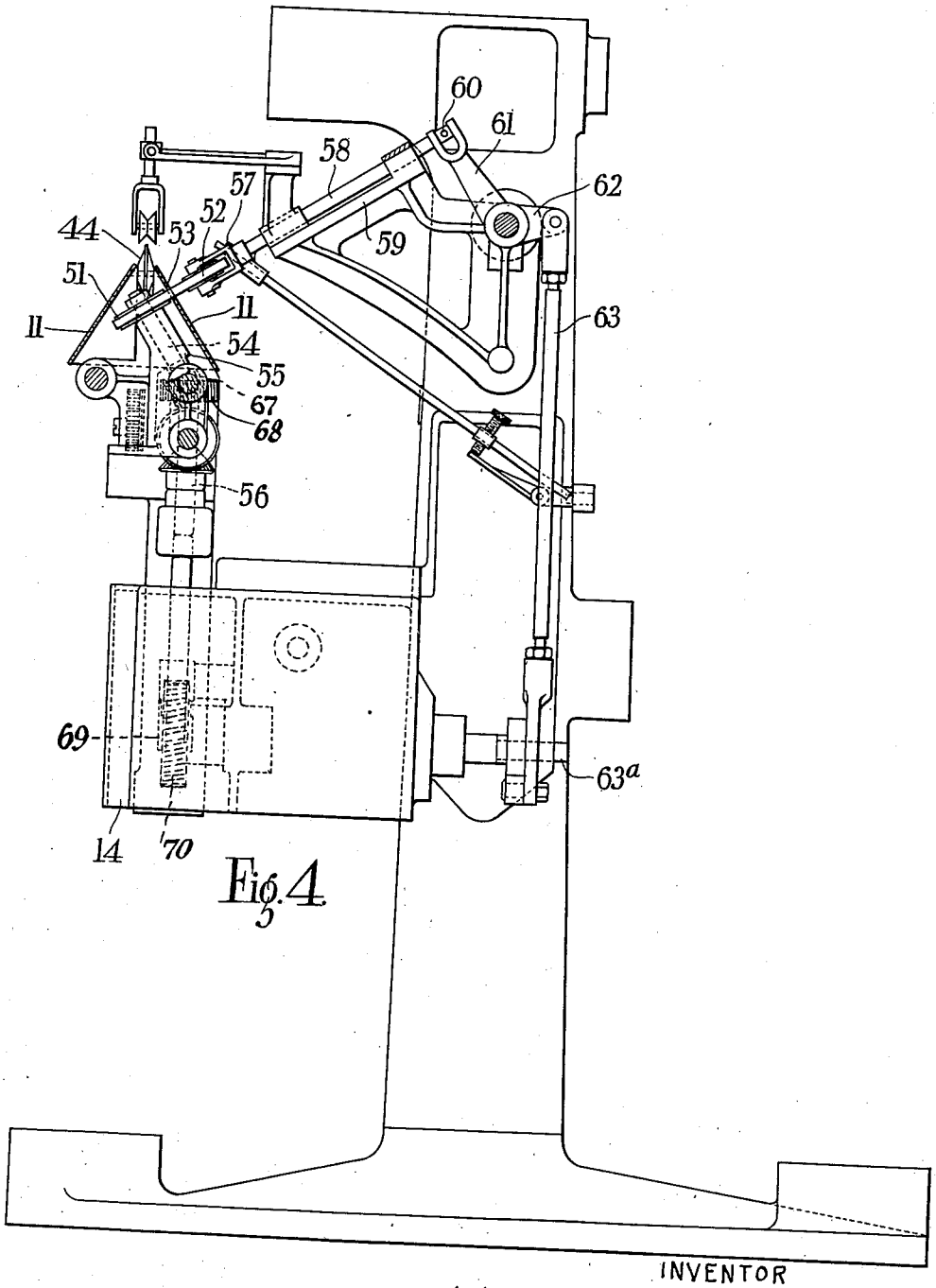

Fig. 4

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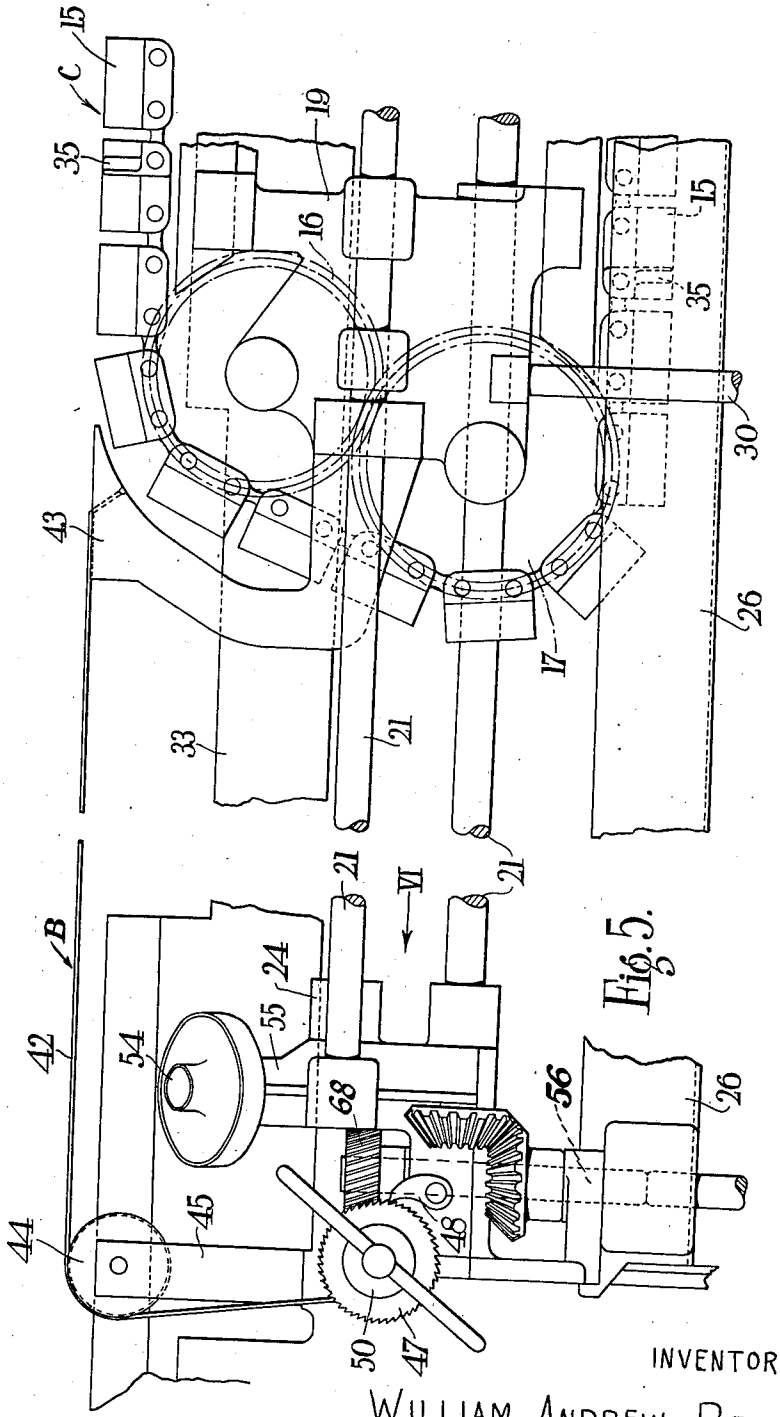

Fig. 5.

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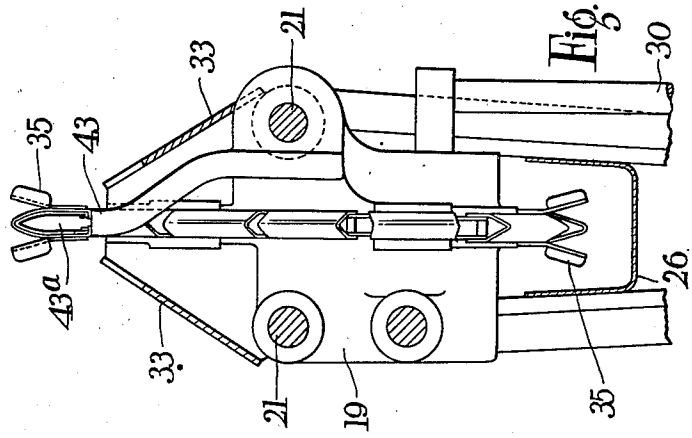
Fig. 8.



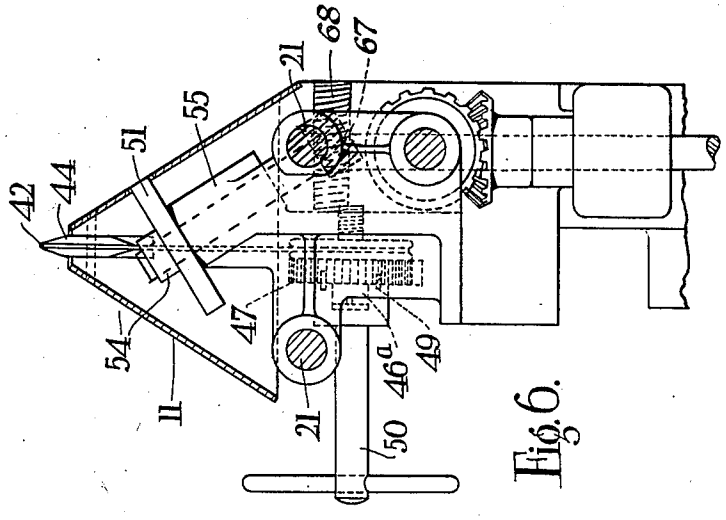


Fig. 6.

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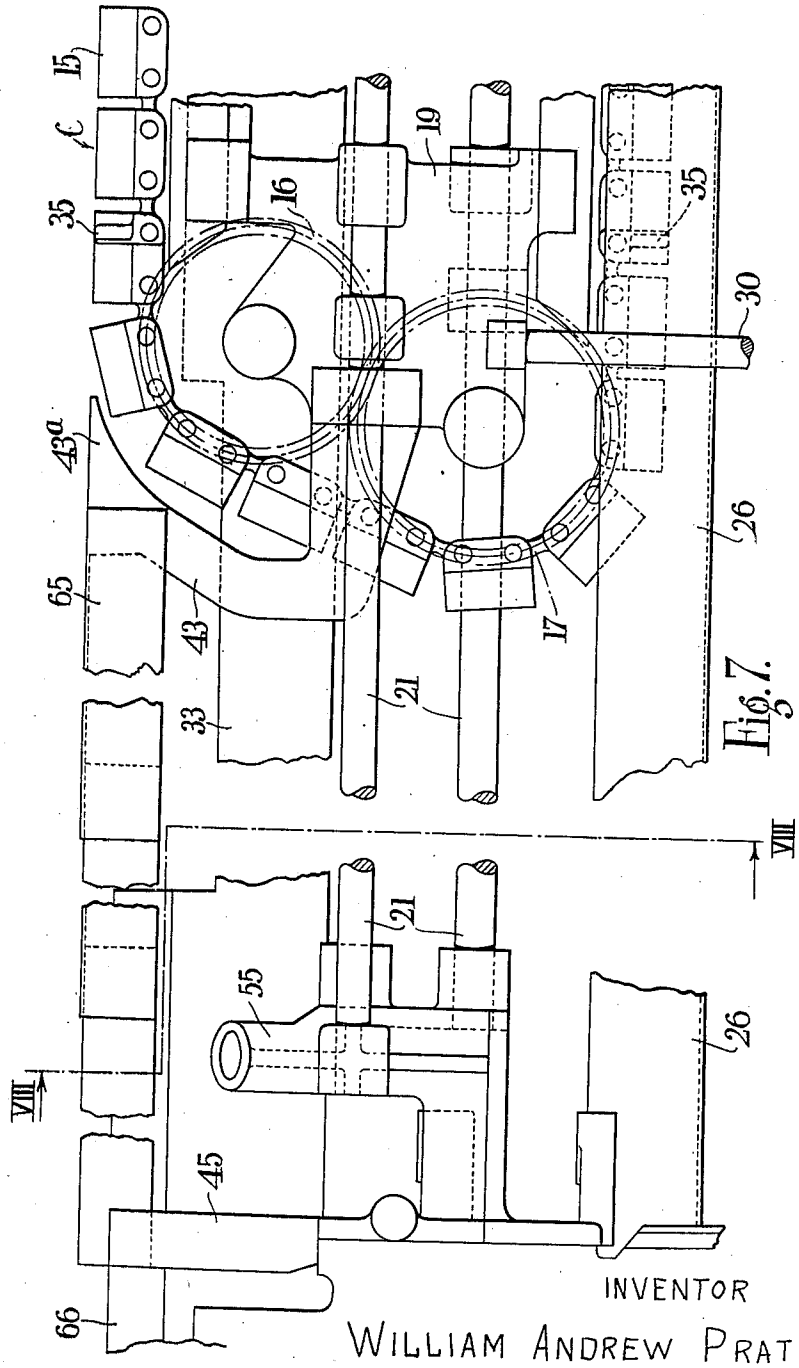

Fig. 7.

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UNITED STATES PATENT OFFICE

2,105,372

WIRE STITCHING MACHINE

William Andrew Pratt, Watford, England, assignor to The F. P. Rosback Company, Benton Harbor, Mich., a corporation

Application June 15, 1936, Serial No. 85,420
In Great Britain June 21, 1935

23 Claims. (Cl. 1—7)

The present invention relates to discontinuous wire stitching or stapling machines such as are used for stitching book signatures and/or folded sheets assembled in book form, and is more particularly directed to machines of this kind in which the work is progressed in intermittent steps of movement along a stitching saddle beneath the stitching means to receive a plurality of stitches or staples from a single stitcher head or each of a number of stitcher heads comprising the stitching means.

In the stitching machines to which this invention is directed the work is fed mechanically to the stitching saddle and to this end is usually laid straddlewise upon a stationary laying-on table such as a roof-shaped saddle which is contiguous with the stitching saddle and has associated therewith a work-forwarding device, e. g., a movable continuous chain or belt carrying a number of spaced pusher fingers each of which, in turn, engages the rear edge of a signature or other work laid upon the table and moves the work along the table and towards the stitching saddle. To accommodate the work feed means to work of different lengths it is necessary longitudinally to adjust the position of the chain and pusher fingers carried thereby relatively to the stitching saddle and work-laying-on table.

Certain advantages, however, are to be found in the use of a travelling work carrier such as the known saddle-link conveyor chain for effecting the feed of the work to the stitcher table. A conveyor of this kind, in effect, forms a moving table, usually roof-shaped, adapted to carry signatures placed straddlewise thereon so that the latter, engaged by rigid pusher fingers secured to the saddle links, are presented to the stitcher means. On the other hand, since it is necessary to adjust the position of the conveyor and pusher fingers relatively to the stitching saddle according to the length of the work to be handled, it has hitherto been impractical, as far as I am aware, to use an adjustable conveyor of this kind for the purpose stated, owing to the gap which is created between the forward extremity of the conveyor and the rear end of the stitching saddle in the adjustment of the conveyor to receive work of greater length than the minimum size with which the machine is intended to deal.

The object of the present invention is to provide a work feed arrangement incorporating a travelling work carrier which may be longitudinally adjusted without creating an unbridged gap between the conveyor and stitching saddle.

According to the present invention in a stitching machine of the kind set forth provision is made of a travelling work carrier, e. g., in the form of a continuous saddle link conveyor chain which is longitudinally displaceable relatively to the stitching saddle and has associated therewith an extensible bridging member or members which is or are arranged to form a continuous extension of the conveyor and adapted to bridge the gap between the stitching saddle and adjacent extremity of the conveyor.

The extensible bridging member may comprise, for example, a taut wire carried by a reel which is located adjacent the free end of the stitching saddle while the extended extremity of the wire is secured at a point closely adjacent the forward end of the work carrying stretch of the saddle conveyor.

Alternatively, the extensible bridging member may be in the form of a telescopic device comprising for instance a series of roof-shaped sections fitting one within the other and mounted upon a suitable support or supports so as to extend from the end of the work-carrying stretch of the saddle conveyor to a point which preferably is closely adjacent the rear end of the stitching saddle.

The extensible bridging member may be manually manipulable, and separately adjusted subsequent to the adjustment of the saddle conveyor but preferably is secured to the displaceable supports of the latter so as to be automatically displaced with the supports in the adjustment of the conveyor. Moreover, if desired, a bridging member comprising a number of telescopic pieces of suitable shape in cross-section may be mounted upon a support at the forward end of the saddle conveyor and normally urged into extended position, for example by the force of suitable springs. In this case the forward extending extremity of the telescopic bridging member will constantly engage the rear end of the stitching saddle or an abutment located adjacent thereto.

Several constructional forms of the invention will now be described with reference to the accompanying drawings in which:

Figs. 1 and 1*a* show in combination an elevational view of a work feed arrangement, incorporating the device of this invention, for the purpose of feeding folded sheets or book signatures to the stationary saddle of a wire stitching mechanism.

Fig. 2 is a sectional elevation taken on the line II—II of Fig. 1 and drawn to a larger scale,

Fig. 3 shows the stitching saddle and adjacent

extremity of the sheet feed arrangement drawn to a larger scale,

Fig. 4 is a view at right angles to Fig. 3 looking in the direction of the arrow IV,

Fig. 5 shows a detail view, drawn to a larger scale, of the extensible bridging member,

Fig. 6 is a view at right angles to Fig. 5 looking in the direction of the arrow VI,

Fig. 7 is a detail view showing, in elevation, an alternative construction of the extensible bridging device of this invention,

Fig. 8 is a cross-sectional elevation taken on line VIII—VIII of Fig. 7, and

Fig. 9 shows in plan view the pivotal mounting of the sheet carrier bars of the laying-on stations.

Referring to Fig. 1, the work feed arrangement includes a travelling conveyor C and associated therewith an extensible bridging device B over which the work to be stitched is progressed to the stitching mechanism S.

The stitching mechanism comprises, in this constructional example, a single wire stitcher head 10 of any desired kind which does not form any part of the present invention and therefore is merely diagrammatically indicated. The head 10 operates in conjunction with clincher mechanism (not shown) upon folded sheets or similar work which is positioned beneath the stitcher head upon a stationary roof-shaped stitching saddle 11. The entire stitching mechanism is supported upon a pedestal 12 and is mechanically actuated in the usual manner by a power drive (not shown) which is also drivingly connected to the main gear 13 mounted in the gearbox 14.

The work conveyor C is arranged in known manner in two superposed stretches comprising a multiplicity of roof-shaped saddle links 15 which are pivotally connected together to form a continuous sprocket chain adapted to be engaged by the teeth of suitable sprocket wheels 16, 17, and 18. The wheels 16 and 18 are follower sprockets while the wheel 17 is a driving sprocket which in turn is driven by connection to gears in the gearbox 14. The saddle link conveyor forms a longitudinal extension of the stitching saddle 11, the apical line of the upper stretch thereof being aligned with the apex of the stitching saddle and substantially level therewith. The sprocket wheels 16, 17 carrying the forward end of the saddle conveyor C and the sprocket 18 around which passes the rear end of the chain are journalled respectively in bearing blocks 19, 20, which are slidably mounted upon parallel guide rods 21. Standards 22 positioned at the extremities of the conveyor C and at spaced intervals along the length thereof, carry upwardly extending arms 23 formed with bearing sleeves which embrace the rods 21 so that the latter are rigidly supported in operative position while serving to hold the standards 22 in spaced relation. The forward extremities of the guide rods 21 are supported by suitable brackets 24 projecting from the stitcher pedestal 12, while the height of the supporting arms 23 relatively to the ground level is readily adjustable by manipulation of the threaded connecting means 25, interposed between each pair of arms and its respective standard. The standards 22 are also connected by a longitudinally extending channel iron 26 forming a guard for the lower stretch of the conveyor chain. The guard 26 passes between the arms 23 and is secured thereto while the forward extremity thereof lodges upon a bracket projecting from the pedestal 12.

The bearing blocks 19, 20 (Figs. 1 and 2) are connected together by longitudinally extending rails 27, 28 which in turn are supported by the former and are rigidly connected together by vertical spacing members 29. The rails 27, 28 are in vertical alignment and arranged so that the upper edge of the rail 27 engages the upper stretch of the saddle conveyor C to support and guide this portion of the latter, while the lower edge of the rail 28 engages and guides the lower stretch of the said saddle conveyor. Runner wheels 38 journalled upon stud-shafts 38a extending between each pair of arms 23 serve slidably to support the lower stretch of the saddle conveyor C.

It will be understood from the above description that the bearing blocks 19, 20, guide rails 27, 28, sprocket wheels 16, 17 and 18 and the saddle link conveyor per se are readily movable as a unit along the rods 21 so as to be adjusted longitudinally relative to the stitcher saddle. To facilitate the adjustment a downwardly projecting handle 30 is rigidly secured to the bearing block 19. The adjustment of the conveyor chain tension is achieved by screw adjusting means at the rear end to the conveyor. These adjusting means comprise threaded bolts 31 (one of which is shown in Fig. 1) positioned one to either side of the conveyor saddle and passing through suitably threaded holes in the convenient rearward pair of spacing members 29 so as to butt against the forward face of the rear bearing block 20. Guide lugs 32 extend forwardly from the block 20 to pass through guide slots in the rearward pair of spacing members 29. The sliding movement of the saddle conveyor arrangement upon the rods 21 is desirably smooth and readily effected but is preferably not loose so that although rigid clamping means may be used positively to hold the saddle in its adjusted position such means are not essential, while the extensible bridging member hereinafter described may be arranged to assist in preventing any undesired movement of the conveyor saddle away from the stitching saddle.

Longitundinally extending plates 33 secured to the outer faces of the upwardly extending, inclined arms 23 form a stationary roof-shaped table upon which rest the lower, free edges of the folded sheets or piece of work as the latter are carried straddlewise upon the upper stretch of the conveyor saddle which moves in a gap provided between the upper edges of the plates 33. The roof-shaped links 15 are adapted to receive upwardly projecting fingers or lugs 35 which are mounted upon selected ones of the links to engage the rearward edges of the sheets or other work positioned at the laying-on stations 36, 37 and 39. Each of the laying-on stations comprises a bar 40 extending longitudinally of the saddle conveyor and aligned with, and spaced above the apex of the latter. Each bar 40 is pivotally secured to the upper extremity of a curved arm 41 (Fig. 2) which is rigidly secured to the connecting means 25 between a pair of the arms 23 and the corresponding standard 22. The upper extremity of each arm 41 (Figs. 1, 2 and 9) is bent so as to lie in a horizontal plane and fashioned with a pair of vertical bearing jaws 70a to receive the shouldered hinge tongue 71a of a hinge bracket 71. The tongue 71a is pivotally secured between the jaws 70a to enable the bracket 71 to rotate about a horizontal pivot pin 72. The brackets 71 are provided with vertical holes 73 to receive rods 74 which are rigidly se-

cured to and extend upwardly from the sheet carrier bars 40, the rods 74 being adjustably secured in the holes 73 by means of set screws 76. The tongued portions of the bearing brackets 71 are formed with vertical shoulders 75 which are arranged to butt against corresponding vertical faces of the bearing jaws 70a. The lower portions of the bracket shoulders are left at an acute angle, while the upper portions are radiused so that although the bars 40 normally rest in the position shown in the drawings, they can readily be deflected upwards in a free movement about the pivot pins 72 if undue upward pressure is applied to the bars.

In the use of the work feed arrangement, for example, for collating book-signatures, successive signatures of each book are deposited upon the bars 40 of the laying-on stations 36, 37 and 38 and in the forward travel of the conveyor C, the foremost lug or finger 35 engages in turn the rear edge of each of the signatures so arranged and deposits it upon the saddle or upon the signatures previously collected by the finger from the laying-on bars.

Referring to Figs. 1 and 3–6, it will be seen that the gap which exists between the forward end of the conveyor C and the adjacent end of the stitching saddle 11 and varies in width according to the longitudinal adjustment of the conveyor C as above described, is bridged by the extensible bridging device B. In this constructional arrangement the device B comprises a single strand cable preferably of wire, or a multiple strand twisted cable 42 secured at one extremity to a nose piece 43 and extending forwardly to a point close to the adjacent end of the saddle 11. The nose piece 43 is secured to the front face of the bearing block 19 and extends upwardly from between the guide rods 21. The upper extremity 43a of the nose piece 43, to which the end of the cable 42 is anchored is roof-shaped in cross-section with its sides inclined at the same angle as the side of the saddle links 15, and lies with the apex thereof in the longitudinal vertical plane which passes through the apex of the conveyor saddle C. The nose piece extremity 43a extends rearwardly with its underface curved to accommodate the forward and downward sweep of the front portion of the conveyor C, while the apical line thereof is level with the apical line of the upper stretch of the conveyor C so as to form a substantially contiguous bearing surface for the work carried thereon. The cable 42, secured to the nose piece extremity 43a so as to extend in line with the apex of the latter, passes round a vertically disposed grooved pulley 44 which is rotatably mounted upon an upwardly extending bearing arm 45, the latter being secured to the stitch pedestal 12. The pulley 44 is located in the gap between the upper edges of the inclined side plates of the stitching saddle 11 and is positioned so that the upper stretch of the cable 42 is level with the apical line of the stitching saddle. The cable 42 is guided around the pulley 44 and passes downwards to wind upon a reel 46, which is also rotatably mounted upon a bearing stud 46a carried by a bearing bracket secured to the pedestal 12 the reel 46 being substantially in vertical alignment with the pulley 44.

To control the rotation of the reel 46 it has firmly clamped thereto a toothed ratchet 47 which thus rotates with the former upon the bearing stud 46a and is engaged by a click pawl 48 pivotally mounted upon a stationary portion of the pedestal structure. The pawl 48 is urged, for example, by spring loading means not shown, constantly to engage the teeth of the ratchet 47 so that the latter is permitted freely to rotate in anticlockwise direction (as viewed in Fig. 5) but is held from rotation in clockwise direction until released by manual manipulation of the pawl. By this arrangement the cable 42 is held taut and extended between the nose piece 43 and pulley 44. To enable the operator conveniently to tighten the cable 42 subsequent to the setting of the conveyor C to a predetermined position, dowel holes 49 are provided in the outer lateral face of the ratchet 47 to receive the pins of a dowel key 50. Alternatively the dowel holes 49 may receive permanently fitted pins which are engageable in suitable holes provided in the dowel key which latter preferably is removable when not in use. Rotation of the ratchet 47 in anticlockwise direction by use of the key 50 will wind the cable around the reel 46 thus to tighten the cable as desired. Obviously, when the position of the conveyor C is to be adjusted by movement of the latter away from the saddle 11, the pawl 48 will be manually displaced, and if needs be withheld from engagement with the teeth of the ratchet 47.

Referring more particularly to Figs. 3 and 4, means are shown for completing the movement of the work across the bridge member B to a position beneath the stitcher head 10. The means for this purpose shown in this constructional example comprise a pair of co-operating feed rolls 51, 52 which are positioned to either side of the rear plate of the stitching saddle 5 so that the peripheral edges of these rolls make operative contact through a slot 53 formed in the said saddle plate. The lower feed roll 51 is mounted to rotate in a stationary position and for this purpose is carried by a stub shaft 54 which is journalled in an inclined bearing bracket 55 and carries at its lower extremity a gear 67 which is one of a pair of spiral gears 67, 68 the other of which is mounted upon the upper extremity of a two-part drive shaft 56. The lower extremity of the shaft 56 also carries a spiral gear 69 which is one of a second pair of spiral gears 69, 70 the other of which pair meshes with the gear set of the change speed gear box 14.

The upper roll 52 is of the rise and fall or drop feed roll kind which is arranged to effect contact with a folded sheet or other work placed upon the saddle S so that the sheet is gripped between the two rolls and moved at predetermined intervals and for predetermined distances. To this end, the roll 52 is journalled in a bifurcated bearing bracket 57 and the latter secured to a slide rod 58 which is slidably mounted in sleeve bearings 59. The upper extremity of the slide rod 58 is provided with a cross pin 60 which is engaged by the slotted extremity of one arm 61 of a pivotal bell crank. The second arm 62 of the bell crank is linked to a pitman 63 which at its lower extremity is connected to a crank mechanism carried upon and driven by a shaft 63a which projects from the gear box 14. The drop feed roll 52 is thus raised and lowered in movements timed through the gear set contained in the box 14 so that the leading portion of each piece of work, i. e., a folded sheet, as this is progressed across the bridge member B is seized between the rolls 51, 52, and at timed intervals is moved step-by-step beneath the stitcher head 10.

In the adjustment of the conveyor according to the above described arrangement the bridg-

ing device is manipulated by the operator either to loosen or tighten the bridging cable as desired.

In an alternative construction of the bridging member B according to this invention, as shown in Figs. 7 and 8, which is equally applicable to the general arrangement of the work feed device above described, the extensible bridging member proper comprises a series of roof-shaped members 65 which are arranged in telescopic relation. One of the members 65 is arranged to fit the upper roof-shaped extremity 43a of the nose piece 43 so as to form a contiguous work bearing surface and is rigidly secured to the nose piece so as rigidly to project forwardly therefrom. The other members 65 are progressively smaller in cross-section so as slidably to fit within the preceding member in a telescopic manner. The foremost member 65 is rigidly secured to a bracket 66 which rises beneath the stitching saddle 11 so as to bring the apex of the member 65 into the gap between the upper edges of the plates of the saddle with the apex thereof level with the apical line of the saddle. As shown in Fig. 8, the lower edges of certain of the members 65 are inwardly, and in some cases upwardly, bent to provide guide ledges or channels for the lower edges of the preceding members.

The bridging device of this construction will readily extend or be contracted in length by the movement of the members one within the other during the longitudinal displacement of the conveyor C relatively to the stitching saddle 11.

Although the extensible bridging device of this invention is particularly applicable to a work feed combination of the nature above described it may per se be applied to any other form of work feed in which a gap is created in the path of the work by adjustment of the associated work feed parts.

I claim:

1. A discontinuous wire-stitching machine which includes at least one stitcher head, a stitching saddle associated with said stitcher head, and means for feeding the work to said stitching saddle, said work-feed means comprising a travelling work carrier device which for purposes of adjustment is longitudinally displaceable relatively to said stitching saddle so that a gap of varying width is created between the adjacent extremities of said stitching saddle and said work carrier device, and an extensible bridging device adapted to bridge said gap.

2. A discontinuous wire-stitching machine which includes at least one stitcher head, a stitching saddle associated with said stitcher head, and means for feeding the work to said stitching saddle, said work-feed means comprising a travelling work carrier device forming a linear extension of said stitching saddle, said work carrier device for purposes of adjustment being longitudinally displaceable relatively to said stitching saddle so that a gap of varying width is created between the adjacent extremities of said stitching saddle and said work carrier device, and an extensible bridging device adapted to bridge said gap so as to provide a work-supporting surface which is substantially contiguous with that of said work carrier device and said stitching saddle.

3. In association with a wire-stitching machine having at least one stitcher head and a stitching saddle, a travelling work carrier device to feed the work to said stitching saddle, said work carrier device for purposes of adjustment being longitudinally displaceable relatively to said stitching saddle, so that a gap of varying width is created between the adjacent extremities of said stitching saddle and said work carrier device, a bridging device adapted to form a substantially contiguous extension of said work carrier device and arranged to bridge said gap, and means for varying the effective length of said bridging device.

4. In association with a wire-stitching machine having at least one stitcher head and a stitching saddle, a travelling work carrier device to feed the work to said stitching saddle, said work carrier device being placed end-to-end with said stitching saddle, and a flexible cable extending in a straight line between the adjacent ends of said stitching saddle and said work carrier device to form therewith a substantially contiguous work-bearing surface.

5. In association with a wire-stitching machine having at least one stitcher head and a stitching saddle, a travelling work carrier device to feed the work to said stitching saddle, said work carrier device being placed end-to-end with said stitching saddle so as to be longitudinally adjustable relatively to the latter, a rotatable reel mounted adjacent said stitching saddle, and a flexible cable secured at one extremity to said work carrier device and passing around said reel so as to lie in a straight line between the adjacent ends of said work carrier device and said stitching saddle to form therewith a substantially contiguous, extensible work-bearing surface.

6. In association with a wire-stitching machine having at least one stitcher head and a stitching saddle, a travelling work carrier device to feed the work to said stitching saddle, said work carrier device being placed end-to-end with said stitching saddle so as to be longitudinally adjustable relatively to the latter, a rotatable reel mounted adjacent said work carrier device, and a flexible cable secured at one extremity to said stitching saddle and passing around said reel so as to lie in a straight line between the adjacent ends of said work carrier device and said stitching saddle to form therewith a substantially contiguous, extensible work-bearing surface.

7. In association with a wire-stitching machine having at least one stitcher head and a stitching saddle, a travelling work carrier device to feed the work to said stitching saddle, said work carrier device being placed end-to-end with said stitching saddle so as to be longitudinally adjustable relatively to the latter, a bracket secured to that end of said carrier device adjacent said saddle and forming a nose-piece therefor, a reel rotatably mounted adjacent said stitching saddle, a guide pulley mounted beneath said saddle so as to rotate in a substantially vertical plane, and a flexible cable attached at one extremity to said nose-piece and passing round said guide pulley and around said reel so as to form an extensible work-supporting surface which extends in a straight line between the adjacent extremities of said stitching saddle and said carrier device.

8. Work-feeding mechanism as claimed in claim 7, in which provision is made of a ratchet coupled to said cable reel, a pawl engaging said ratchet normally to limit the rotation of said cable reel to one direction, and means for manually rotating said reel in said one direction to tension said cable by winding it around said reel, said pawl being readily releasable when desired to permit said cable to pay out from said reel.

9. In association with a wire-stitching machine having at least one stitcher head and a

stitching saddle, a travelling work carrier device to feed the work to said stitching saddle, said work carrier being placed end-to-end with said stitching saddle so as to be longitudinally adjustable relatively to the latter, and an extensible bridging device arranged to form a substantially contiguous work-bearing surface between the adjacent ends of said work carrier device and said stitching saddle, said bridging device comprising at least two members adapted to fit telescopically one within the other.

10. In association with a wire stitching machine having at least one stitcher head and a stitching saddle, a travelling work carrier device to feed the work to said stitching saddle, said work carrier device being placed end-to-end with said stitching saddle so as to be longitudinally adjustable relatively to the latter, a bracket secured to said work carrier device to form a nose-piece and an extensible bridging device secured to said bracket and extending towards said stitching saddle, said bridging device comprising a plurality of telescopic members arranged slidably to fit one within the other.

11. In association with a wire stitching machine having at least one stitcher head and a stitching saddle, a travelling work carrier device to feed the work to said stitching saddle, said work carrier device being placed end-to-end with said stitching saddle so as to be longitudinally adjustable relatively to the latter, a bracket secured to said work carrier device to form a nose piece, a bracket adjacent said stitching saddle, and an extensible bridging device comprising a plurality of telescopic members arranged slidably to fit one within the other, said telescopic member of largest cross-section being secured to said nose piece bracket and said telescopic member of smallest cross-section being secured to said bracket adjacent said stitching saddle so that said bridging device extends or contracts in length according to the longitudinal adjustment of said work carrier.

12. In association with a wire-stitching machine having at least one stitcher head and a stitching saddle, a travelling work carrier device to feed the work to said stitching saddle, said work carrier device being placed end-to-end with said stitching saddle so as to be longitudinally adjustable relatively to the latter, a bracket secured to said work carrier device, and a bridging device extending between the adjacent ends of said stitching saddle and said work-carrier device, said bridging device comprising a series of roof-shaped members supported one by the other in telescopic manner while one of said members is rigidly secured to said nose-piece bracket.

13. In association with a wire-stitching machine having at least one stitcher head and a stitching saddle, a travelling work-carrier device to feed the work to said stitching saddle, said device for purposes of adjustment being longitudinally displaceable relatively to said stitching saddle so that a gap of varying width is created between the adjacent extremities of said work carrier device and said stitching saddle, a supporting bracket positioned in said gap and an extensible bridging device supported by said bracket and comprising a number of interengaging sections supported one by the other in telescopic manner so as to form a substantially contiguous work-bearing surface between said saddle and said device.

14. A work feed device for feeding folded sheets to a wire stitching machine including, in combination, a supporting frame, a pair of bearing members slidably mounted on said frame, sprocket wheels journalled in said members, a continuous sprocket chain passing round said sprocket wheels, a series of saddle-shaped sections secured to the links of said chain to form a continuous work-bearing surface, a rigid nose-piece projecting outwardly from one extremity of said chain to form a substantially contiguous extension of said work-bearing surface, and an extensible bridging member secured at one extremity to said nose-piece and arranged to form a longitudinal work-bearing extension thereof.

15. A work feed device for feeding folded sheets to a wire stitching machine, including in combination, a supporting frame, a pair of bearing members slidably mounted in spaced relation upon said frame, sprocket wheels journalled in said bearing members, a series of saddle-shaped sections interconnected to form a continuous chain which passes around said sprocket wheels, and forms a substantially horizontal work-bearing surface, a nose-piece secured to one of said bearing members to form a substantially contiguous extension of said work-bearing surface, and an extensible bridging device abutting at one extremity the outer end of said nose piece so as to form a further contiguous extension of said work bearing surface.

16. The combination claimed in claim 15, in which provision is made of a series of work-laying-on stations each of which comprises a member extending longitudinally of said work-bearing surface to support said work, and means for pivotally mounting said members above said work-bearing surface so that said members perform a voluntary upward deflection if a fault in the work feed results in abnormal pressure being applied to said member.

17. A work feed device for feeding folded sheets to a wire-stitching machine, including, in combination, a supporting frame, a pair of bearing members slidably mounted in spaced relation upon said frame, sprocket wheels mounted upon said bearing members so as to rotate in a common vertical plane, stationary work deflecting plates secured to said frame and extending longitudinally thereof, said plates being inclined towards each other in the upward direction with their upper edges spaced apart, a series of saddle-shaped links interconnected to form a continuous chain having upper and lower stretches, the upper stretch of said chain projecting upwardly through the gap between said stationary plates to carry said work, a nose piece secured to one of said bearing members to form a substantially contiguous extension of the work bearing stretch of said chain, and an extensible bridging device abutting said nose piece and extending therefrom so as to form a further contiguous extension of said nose piece.

18. The combination claimed in claim 17, wherein the bridging device comprises a flexible cable secured to said nose piece, and a rotatable reel offset from said nose piece and arranged to receive a portion of said cable.

19. The combination claimed in claim 17, wherein the bridging device comprises a series of saddle-shaped members arranged slidably to support each other in telescopic manner.

20. A discontinuous wire stitching machine which includes, in combination, at least one stitcher head, a stitching saddle comprising a pair of plates inwardly inclined in the upward

direction with their upper edges spaced apart, a pair of co-operating rolls arranged to move the work along said stitching saddle in intermittent steps of movement, a work feed device for feeding the work to said stitching saddle, said work feed device comprising a supporting frame, a pair of bearing members slidably mounted upon said frame, sprocket wheels journalled in said bearing members, a series of saddle-shaped links interconnected to form a continuous articulated saddle which passes round said sprockets, said articulated saddle being in end-to-end relation to said stitching saddle, and an extensible bridging device positioned between the adjacent ends of said stitching saddle and said articulated saddle so as to form a substantially contiguous work-bearing surface therebetween.

21. The combination claimed in claim 20, in which the extensible bridging device comprises a guide pulley set in the gap between said stitching saddle plates, a reel positioned beneath said guide pulley, both said pulley and said reel being arranged to rotate in a common substantially vertical plane, and a flexible cable carried by said reel and passing round said guide pulley with its free end secured to said nose piece.

22. The combination claimed in claim 20, in which provision is made of a supporting bracket set adjacent said stitching saddle, and said extensible bridging member comprises a series of saddle-shaped members slidably interconnected in telescopic manner and in a straight line, the extreme members of said device being secured to said nose piece and said bracket respectively.

23. The combination claimed in claim 20, which includes laying-on stations each comprising a hinged bar set above said articulated saddle and extending longitudinally thereof to receive the work, and pusher fingers secured to said articulated saddle so as to engage the work placed upon said bars and deposit it upon said articulated saddle in the movement of the latter, said bars being hinged so as voluntarily to yield to upward pressure exerted thereon by jamming of faulty work.

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