

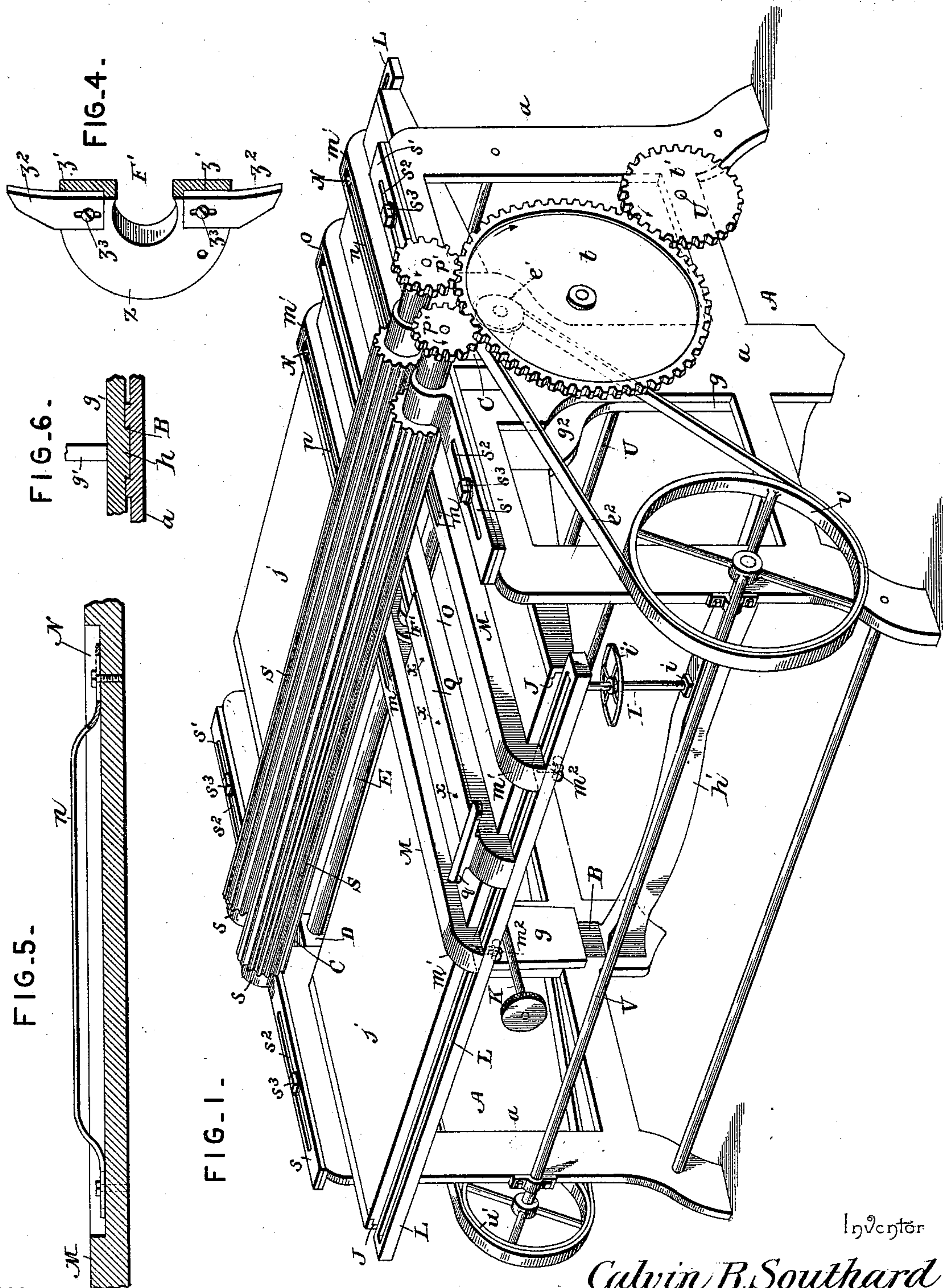
(No Model.)

2 Sheets—Sheet 1.

C. B. SOUTHARD.
BOX MACHINE.

No. 521,224.

Patented June 12, 1894.



Inventor

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By *his* Attorneys.

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FIG. 2.

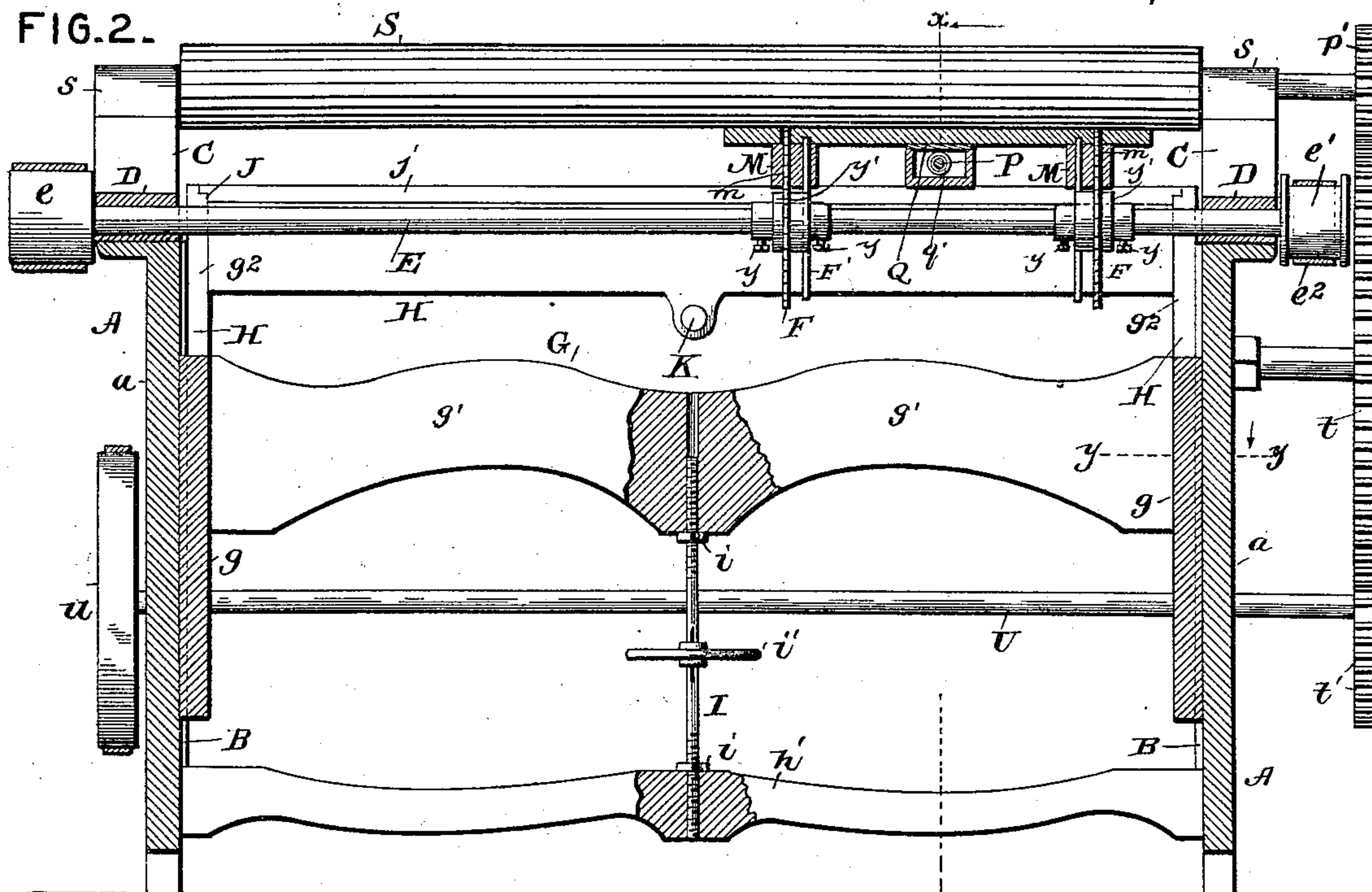


FIG. 3.

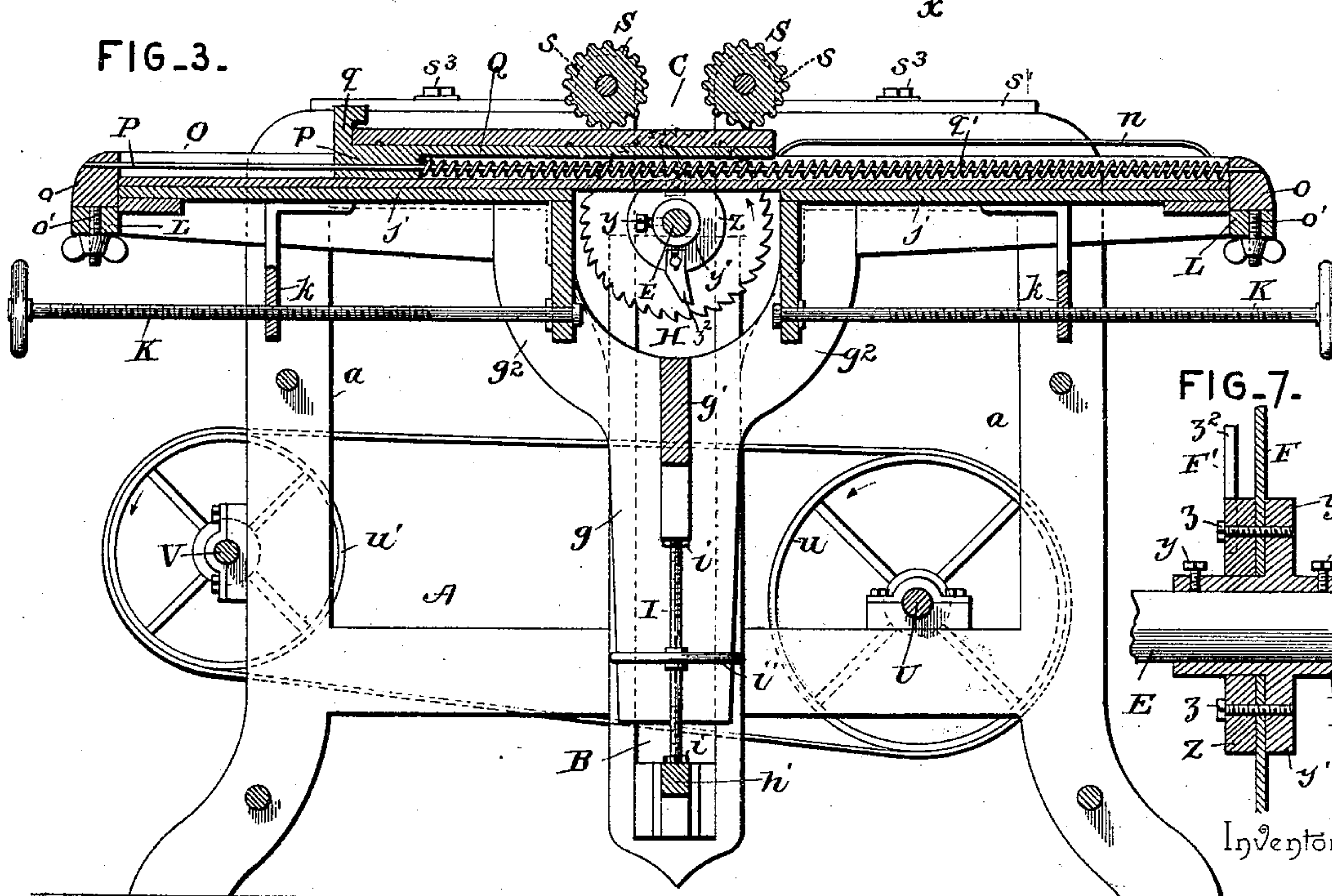
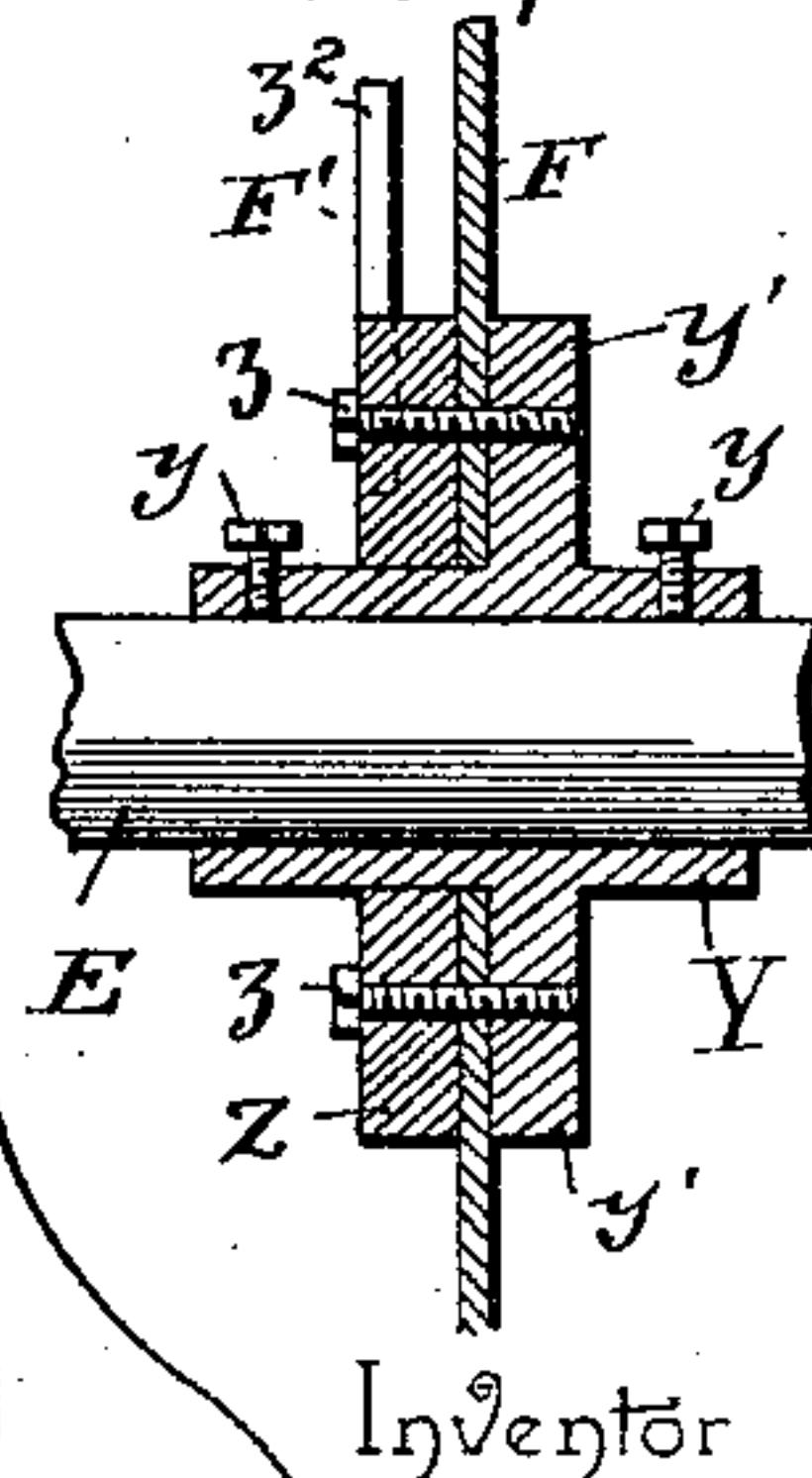


FIG. 7.



Witnesses

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UNITED STATES PATENT OFFICE.

CALVIN B. SOUTHARD, OF ST. ALBANS, MAINE.

BOX-MACHINE.

SPECIFICATION forming part of Letters Patent No. 521,224, dated June 12, 1894.

Application filed January 8, 1894. Serial No. 496,079. (No model.)

To all whom it may concern:

Be it known that I, CALVIN B. SOUTHARD, a citizen of the United States, residing at St. Albans, in the county of Somerset and State of Maine, have invented a new and useful Box-Machine, of which the following is a specification.

This invention relates to box-machines for edging and grooving box-boards for boxes of that class in which the top and bottom boards engage grooves near the edges of the box sides.

To this end the main and primary object of the present invention is to effect certain improvements in machines of this character whereby box-boards can be quickly edged up and grooved at a single operation and in any widths desired.

The invention also contemplates a machine which shall require but few operators or attendants, and one which can be quickly and easily adjusted to be accommodated to any width of boards, or for turning out different sizes of boards which are to be edged and grooved.

With these and other objects in view which will readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination and arrangement of parts hereinafter more fully described, illustrated and claimed.

In the accompanying drawings:—Figure 1 is a perspective view of a box or edging machine constructed in accordance with this invention, showing two sets of saws, which are arranged in gang in a working machine. Fig. 2 is a central vertical transverse sectional view thereof on the line 2—2 of Fig. 3. Fig. 3 is a vertical longitudinal sectional view on the line $x-x$ of Fig. 2. Fig. 4 is a detail view of the groover disk. Fig. 5 is an enlarged detail longitudinal sectional view of one end of a rest bar. Fig. 6 is a detail sectional view on the line $y-y$ of Fig. 2. Fig. 7 is a detail sectional view of the saw and groover attachment for the saw arbor or shaft.

Referring to the accompanying drawings: A represents the machine frame or stand having the opposite frame sides a , each of which sides is provided with an inner vertical guide groove B, arranged at a central point of the frame and leading up to the opposite top

bearing notches C, disposed at the center and top of the opposite sides of the frame or stand and accommodating therein the removable bearing boxes D.

The removable bearing boxes D, arranged in the opposite top notches C, receive the opposite ends of the transverse saw arbor or shaft E. The transverse saw arbor or shaft E, is arranged centrally and transversely of the frame or stand of the machine and has attached to one extremity thereof the drive pulley e , which receives a belt from the engine or other motive power, while to the opposite extremity thereof is attached the belt pulley e' , over which passes one end of the belt e^2 , which will be more particularly referred to. The said centrally arranged transverse saw arbor E, accommodates thereon a gang of saws F and F'. These saws are arranged in separated pairs, the saws F, being ordinary circular edging saws and paired with a saw F', which saws are also circular saws, but are of a diameter less than the saws F, so as to provide means for grooving a piece of board near the edge lined up by the adjacent edging saw. The separated pairs of grooving and edging saws on the saw arbor or shaft, are adapted to be arranged at proper distances apart according to the width of board to be squared off, and it will of course be understood that the width of the machine frame or stand may be as great or small as desired according to the number of saws to be used and the number of boards to be run off.

Arranged for adjustment within the machine frame or stand A, between the opposite sides thereof, is the vertically adjustable table or bed frame G. The vertically adjustable table or bed frame G, is provided with the opposite depending guide arms g , which arms g , are connected by the transverse frame bar g' , and have upper forked ends g^2 , which separate the front and back portions of the table or bed frame and form a central transverse saw slot H, which accommodates the transverse saw-arbor or shaft and the edging and grooving saws carried thereby, and also provides a space which accommodates the vertical adjustment of said table or bed frame G. The said opposite guide arms g , of the vertically adjustable frame G, are further provided upon their outer faces with

the projected guide ribs *h*, which slide in the inner vertical guide grooves *B*, of the opposite frame sides and hold the frame steady in its vertical adjustment, which is secured by the vertical adjusting screw *I*, arranged between the transverse frame bar *g'*, and the bottom bearing bar *h'*, connecting lower opposite portions of the frame sides. The vertical adjusting screw *I*, is threaded at its extremities to engage the upper and lower nuts *i*, and carries at an intermediate point the horizontal adjusting wheel *i'*, which provides convenient means to raise and lower the table or bed frame.

At the front and rear sides of the transverse saw-slot *H*, at the top of the frame *G*, the latter is provided with the opposite grooved side edges *J*, which accommodate the opposite side edges of the removable table or bed boards *j*. These table or bed boards *j*, are adjusted to and away from the saws by means of the longitudinally arranged adjusting screws *K*, arranged longitudinally under the top of the frame *G*, and adapted to engage the threaded blocks *k*, attached to each of the table or bed boards *j*, so that in readjusting or setting the saws properly in position on the saw arbor or shaft, the opposite table or bed boards can be adjusted sufficiently away from the saw shaft to permit ready access thereto, and after the saws are properly positioned the table or bed boards *j*, are then adjusted close up to the saws, to close up the throat at each side of the same and prevent edgings from falling down between the saws.

At the front and rear edges of the vertically adjustable frame *G*, are arranged the transverse slotted adjustment strips *L*, which extend the entire width of the table frame and are adapted to have adjustably attached thereto the opposite extremities of the parallel rest bars *M*, arranged on top of the table for lateral adjustment. The said rest bars *M*, extend longitudinally of the table and form supports and guides for the pieces of board or stock which are fed onto the saws, and said rest bars *M*, are provided at intermediate points with the saw-slots *m*, one of which slots accommodates an edging saw and the other of which accommodates the grooving saw paired thereto. It will therefore be seen that there is a pair of these rest bars for each two pairs of saws which are necessary to edge up and groove the two edges of a board, and said rest bars are provided with shouldered ends *m'*, which engage over the opposite edges of the table and rest on top of the strips *L*. The shouldered ends *m'*, have attached thereto the bolts *m²*, engaging the slots in the strips *L*, to provide for the adjustment of the rest bars and for holding the same in any adjusted position. These rest bars are adjusted to and away from each other according to the width of board to be edged up and therefore according to the space between the separated pairs of saws. The said rest bars *M*, are further provided in the top there-

of with the longitudinal recesses *N*, which accommodate therein the lifting springs *n*, which normally project above the top of the rest bars to lift the board or stock from the feed slide at the proper moment, as will be more particularly referred to.

Arranged between each pair of rest bars *M*, is a laterally adjustable slotted guide strip *O*. The guide strip *O*, is slotted longitudinally its entire length and is provided with the shouldered ends *o*, carrying the bolts *o'*, to engage the adjustment strips *L*, as previously described for the rest-bars. A longitudinal guide rod *P*, is arranged within the slot of the guide strip *O*, and passes through the guide block *p*, projected from the bottom of the feed slide *Q*, working on top of the guide-strip, and carrying at the front end thereof the rest-head *q*, against which one end of the board, to be edged up, is placed before feeding the same onto the saws. A spiral spring *q'*, is coiled on the longitudinal guide rod *P*, and is suitably connected at one end to the feed slide *Q*, for normally returning the same to the front end of the guide strip, and therefore to the front edge of the machine to receive another board. In operation, the board to be edged up is placed on the feed slide and also rests on top of the rest bars *M*, on each side of the feed slide. By moving the feed-slide forward with the hand the board is shoved onto the opposite pair of saws and both edges thereof will be operated on by such saws, and at the point of engagement with the saws and when about leaving the same, the board or stock is caught by the parallel feed rolls *S*. The parallel feed rolls *S*, are arranged horizontally above the saws and are longitudinally corrugated to insure a grip on the board or stock to feed the same along. The opposite ends of the corrugated feed rolls *S*, are journaled in the bearing boxes *s*, located at each side of the top bearing notches *C*, and mounted on one end of the adjustable bearing plates *s'*, having the slots *s²*, engaged by the thumb screws or bolts *s³*, for adjustably and removably holding the bearing plates on the opposite top edges of the machine frame or stand.

The longitudinally corrugated feed rolls *S*, carry upon one end thereof outside of the frame the cog pinions *p'*, both of which are engaged by or mesh with the cog-gear wheel *t*, which in turn meshes with a similar gear wheel *t'*, mounted on one end of the feed shaft *U*, journaled transversely of the machine frame or stand below the table and carrying upon its opposite end the wheel *u*, belted to an opposite belt wheel *u'*. The belt wheel *u'*, is mounted upon one end of the counter-shaft *V*, journaled at the front end of the machine frame or stand and carrying upon one end opposite the wheel *u'*, the belt wheel *v*, which receives one end of the belt *e²*, thereby providing a connection with the saw arbor or shaft so as to communicate motion therefrom to the feed rolls *S*. After the feed slide *Q*,

which is preferably provided with the small short studs or spurs x , to slightly engage and hold the board firm thereon, has been moved to a position where the front feed roll engages the board, the hand may be released from the feed slide, and at the moment the rear feed roll has moved the board out from the saws, the lifting springs, which have been depressed by the board passing under the feed rolls, quickly assume an active position and lift the board off of the feed slide Q , so that the latter will be quickly returned to the front edge of the machine by the spring q' , and the operator can readily place another board in position to be fed onto the saw.

For convenience in understanding the present invention I have described the saw and groover attachments on the saw arbor or shaft as being separated pairs of saws, the saws F , being ordinary circular edging saws and paired with a grooving saw F' . The saws F , are removably clamped in position on an attachment sleeve Y , adjustably held onto the saw arbor or shaft E , by the set screws Y , and is provided with a fixed clamp disk y' , against which is placed the saw F . The circular edging saw F , of each saw attachment is held removably clamped against the fixed clamp disk y' , by the removable clamp or groover disk Z . The disk Z , is fastened to the disk y' , by the clamping screws z , which hold the saw F , in position, and said disk Z , is further provided at intervals with the notches z' , to removably receive the inner slotted ends of the grooving teeth z^2 , held adjustably in the notches of the groover disk by the set screws z^3 .

When it is not desirable to groove a piece of work being edged up, the teeth z^2 , may be readily removed from the attachment, and it will now be understood that the grooving saws referred to as being paired with the edging saws, consist of the disk Z , and the adjustable and removable teeth z^2 , which is the preferable construction of grooving saw employed by me.

While I have indicated the herein-described machine as especially adapted for edging box-boards with grooves, yet I will have it understood that the machine is intended for making all sizes of boxes with or without grooved sides, door-panels, the sides of drawers, and in fact any kind of boards which it is necessary to edge up to a certain width.

Changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

1. In an edging or box making machine, the frame, a vertically adjustable table mounted within the frame and having a transverse saw-slot at the top, a transverse saw arbor arranged in the saw slot of the table and carrying a gang of saws, a feed-slide mounted on

top of the table, means for adjusting the position of the feed slide transversely on the vertically adjustable table and feed rolls removably and adjustably mounted on the frame above the table and feed slide, substantially as set forth.

2. In an edging or box making machine, the combination of the table or bed having a central transverse saw slot, the saw arbor or shaft arranged in the slot of the table or bed and carrying a gang of saws, parallel rest bars arranged longitudinally on the table or bed, and having intermediate saw openings or slots through which the saws project a feed slide mounted to move longitudinally on the table between the rest bars and saws, and parallel feed rolls adjustably arranged above the rest-bars and feed slide at an intermediate point of the rest bars, substantially as set forth.

3. In an edging or box making machine, the frame or stand, a vertically adjustable table or bed mounted within the frame or stand, a horizontal saw arbor or shaft mounted on the frame or stand at a point intermediate of the front and rear edges of the table or bed, separated pairs of edging and grooving saws mounted for longitudinal adjustment on said arbor or shaft, the separate saws of each pair being arranged slightly spaced from each other, longitudinal rest bars adapted to be arranged in alignment with the pairs of saws, and a feed slide arranged to work on the table between the separated pairs of saws and the rest bars, substantially as set forth.

4. In an edging or box making machine, the combination of a vertically adjustable table having a central transverse saw-slot, a saw shaft or arbor arranged to rotate in the slot of the table and carrying a gang of saws, parallel rest bars mounted for lateral adjustment on the table and having saw slots or openings through which the saws project, a laterally adjustable feed slide mounted on the table between the rest bars, and parallel feed rolls adjustably arranged above the rest bars and feed slide, substantially as set forth.

5. In an edging or box making machine, the frame or stand having opposite inner vertical guide grooves and a bottom bearing bar, a vertically adjustable table or bed having depending guide arms provided with upper forked ends dividing the table or bed into separate front and rear portions, projected guide ribs engaging the inner vertical guide grooves of the frame or stand and a transverse frame bar, a vertical adjusting screw stepped in said bottom bearing bar and engaging said transverse frame bar, a transversely arranged saw arbor carrying a gang of saws turning in the space between the front and rear portions of the table or bed, and adjustable feed devices arranged on the table or bed, substantially as set forth.

6. In an edging or box making machine, the frame, a vertically adjustable table frame having a central transverse saw slot and opposite grooved side edges at the front and

rear sides of said slot, adjustable table boards adapted to slide in the grooved side edges of the table frame, means for adjusting the table boards to and away from the center of the machine, a transverse saw arbor arranged in said saw slot and carrying a gang of saws, and the feeding devices removably and adjustably arranged on top of the table boards, substantially as set forth.

7. In an edging or box making machine, the combination with the machine frame or stand having opposite top bearing notches, a central transverse saw arbor mounted in said top bearing notches and carrying saws, the table or bed mounted within the machine frame or stand and having slotted adjustment strips at the front and rear edges thereof, parallel laterally adjustable rest bars mounted on the table or bed and having shouldered bolt ends adjustably engaging said slotted strips, and intermediate saw slots or openings through which the saws project, a laterally adjustable guide strip arranged on the table or bed and having shouldered bolt ends engaging the front and rear adjustment strips between the rest bars, a spring returned feed slide mounted on said guide strip, opposite pairs of bearing boxes removably and adjustably mounted at each side of the frame bearing notches, and parallel feed rolls journaled in said bearing boxes and geared with the saw arbor, substantially as set forth.

8. In an edging or box making machine, the combination with the machine frame or stand; of a central transverse saw arbor carrying separated pairs of edging and grooving saws,

the table or bed, parallel rest bars mounted on said table or bed and having longitudinal top recesses, and saw slots or openings, normally-projected lifting springs seated in the top recesses of said rest bars, a slotted guide strip arranged adjustably between the rest bars, a guide rod arranged longitudinally in said guide strip, a feed slide mounted on said guide strip and having a rest head at one end and a bottom guide block engaging said guide rod, a spring arranged in said guide strip and attached to said feed slide, and the adjustable corrugated feed rolls mounted on the machine frame above said rest bars, and geared with the saw arbor, substantially as set forth.

9. In an edging or box making machine, the combination with the table or bed and the saws; of parallel rest bars arranged on the table or bed, a feed slide mounted on the table or bed and arranged to move between the rest bars, feed rolls arranged horizontally above the rest bars, means for lifting the stock from the feed slide and above the rest bars after leaving the rear feed roll, and means for automatically returning the feed slide to the front of the table or bed after the stock is lifted therefrom, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

CALVIN B. SOUTHARD.

Witnesses:

CHARLES A. SOUTHARD,
C. A. MOULTON.