

(No Model.)

5 Sheets—Sheet 1.

J. CONNELL & V. DENGLER.
RESAWING MACHINE.

No. 243,692.

Patented July 5, 1881.

Fig. 1

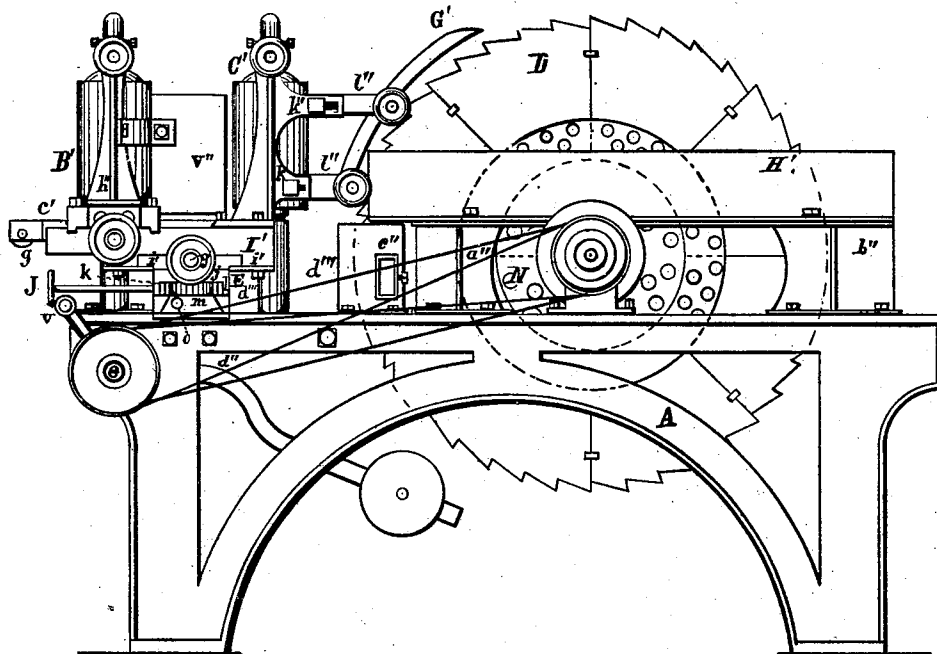
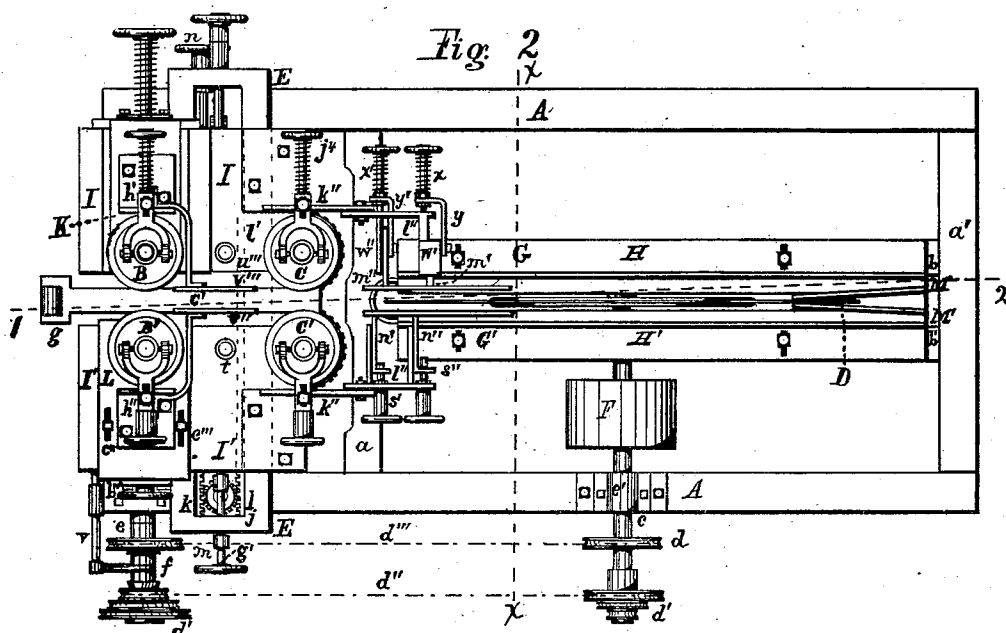


Fig. 2



Witnesses:

W. M. Peabody &
A. B. Selden

Inventors:

John Connell, &
Valentine Dengler,
by G. B. Selden, atty.

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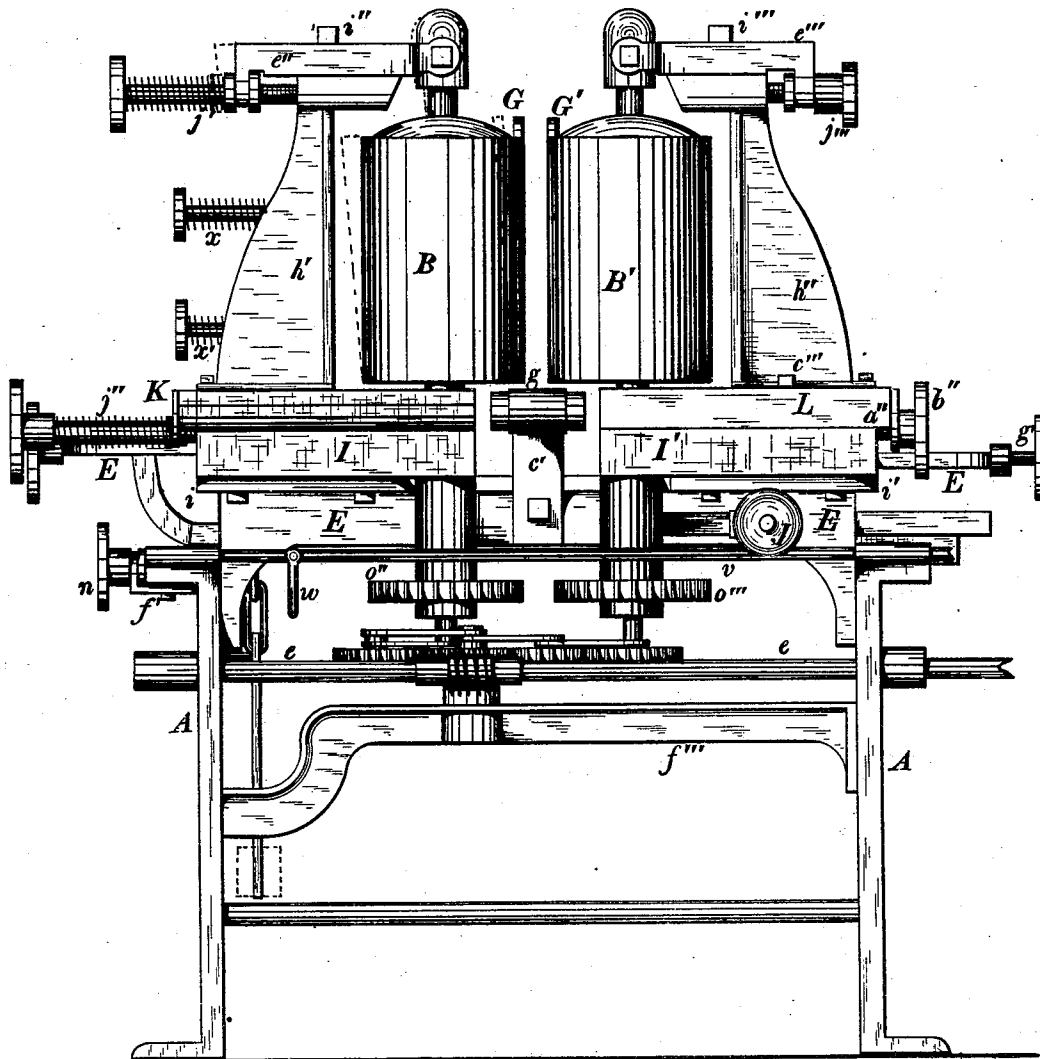
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Fig. 3.



WITNESSES =

H. Phillips.
A. R. Selden.

INVENTORS =

John Connell and
Valentine Dengler,
by Geo. B. Selden,
Atty

(No Model.)

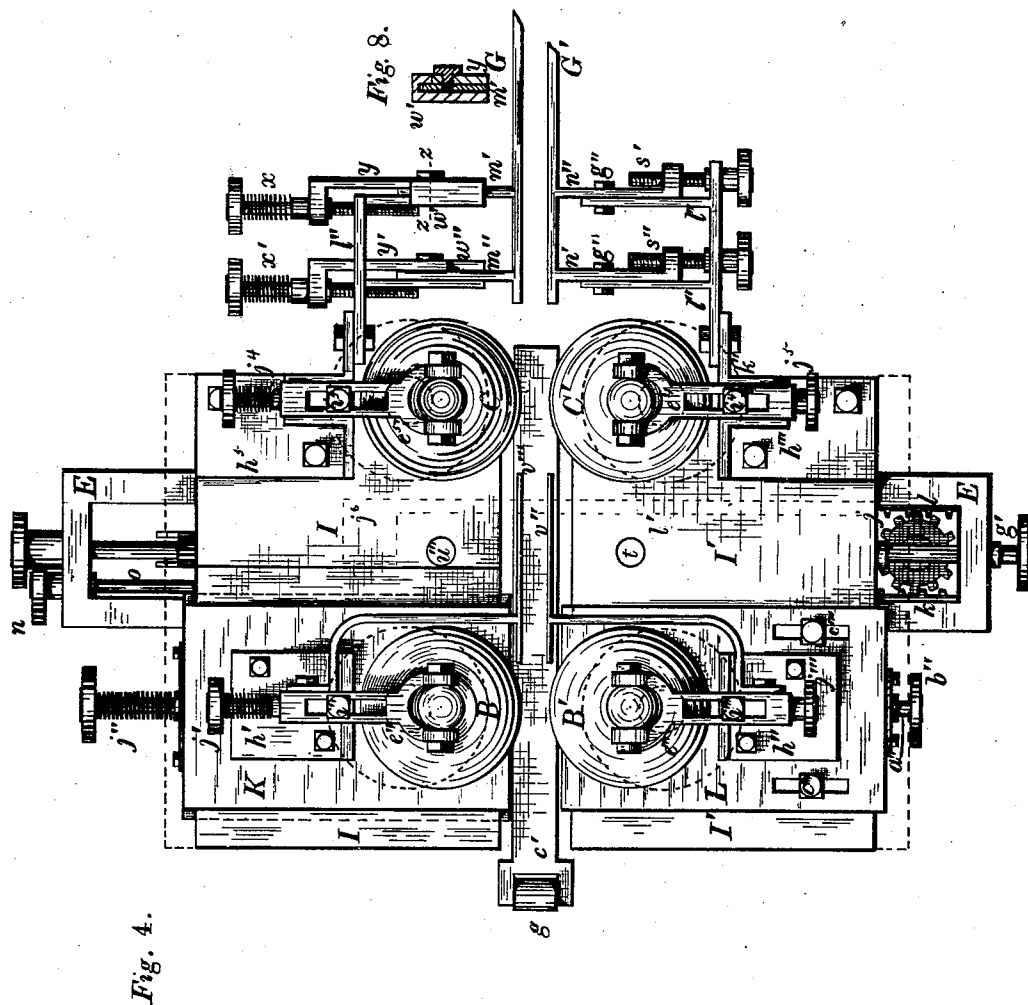
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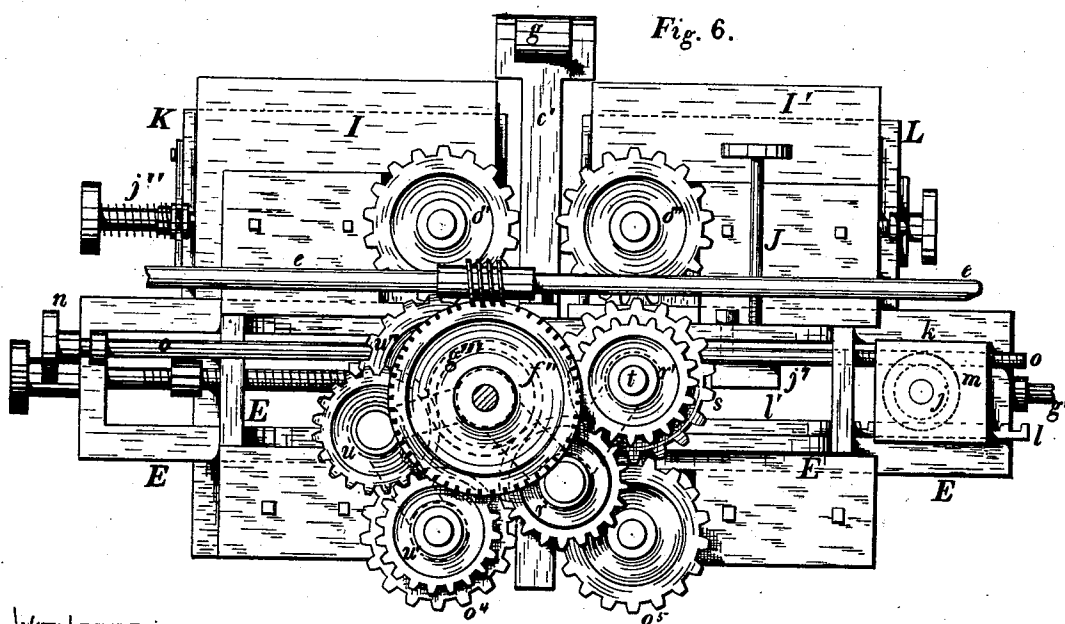
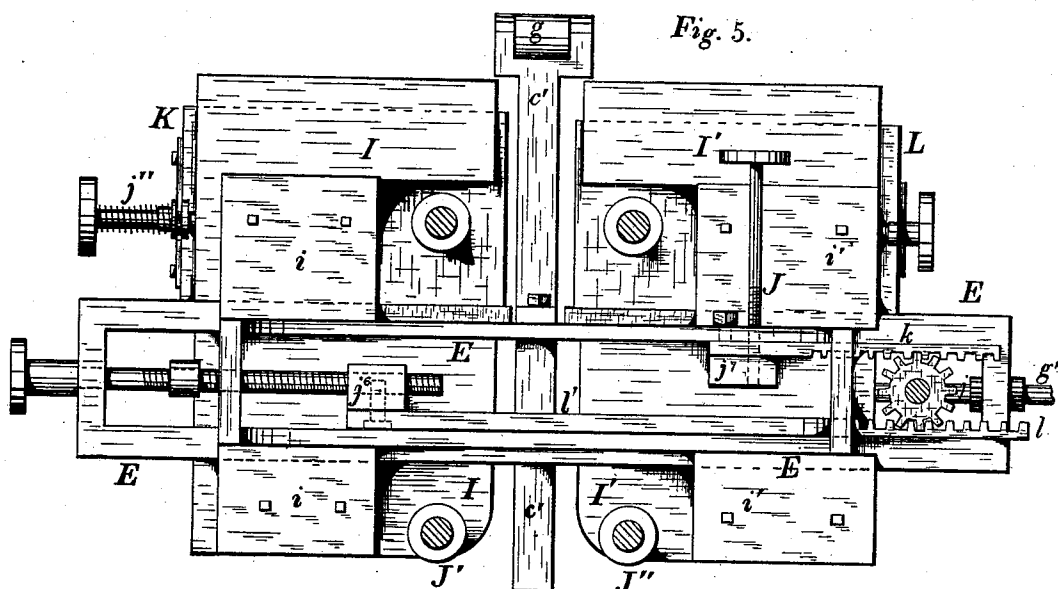
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WITNESSES =

H. Phillips
A. R. Selden.

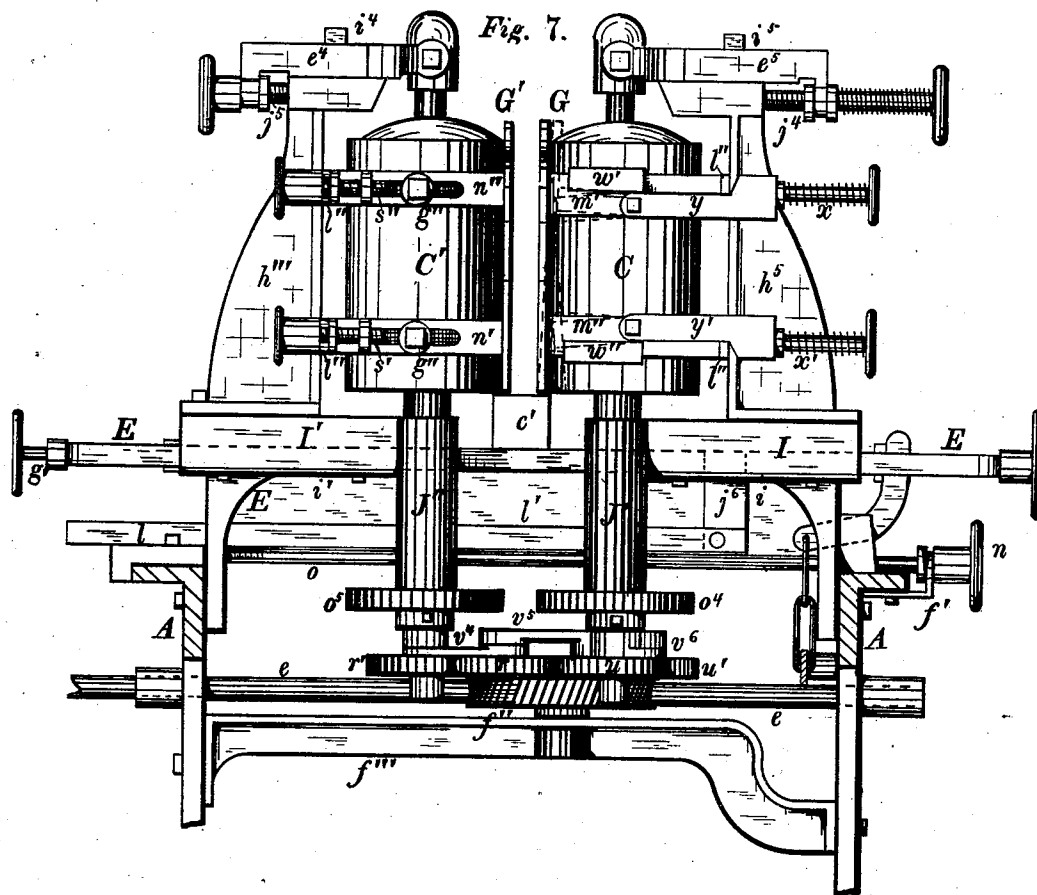
INVENTORS =

John Connell and
Valentine Dengler,
by Geo. B. Selden,
Atty.

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RESAWING MACHINE.

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INVENTORS =

H. G. Phillips.
A. R. Selden.

John Connell and
Valentine Deugler,
by Geo. B. Selden,
Atty.

UNITED STATES PATENT OFFICE.

JOHN CONNELL AND VALENTINE DENGLER, OF ROCHESTER, NEW YORK.

RESAWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 243,692, dated July 5, 1881.

Application filed May 8, 1880. (No model.)

To all whom it may concern:

Be it known that we, JOHN CONNELL and VALENTINE DENGLER, residents of the city of Rochester, in the State of New York, have jointly invented certain Improvements in Resawing-Machines, of which the following is a specification, reference being had to the annexed drawings, in which—

Figure 1 is a side elevation of our improved resawing-machine. Fig. 2 is a plan view of the same. Fig. 3 is a front elevation. Fig. 4 is a plan view of the feeding-rolls, bed-plate, and clamps. Fig. 5 is an inverted view of the bed-plate, the expansion-gearing being removed. Fig. 6 is an inverted view of the bed-plate and the expansion-gearing. Fig. 7 is a vertical section on the line *x x*, Fig. 2, showing the parts in front of that line, the saw being omitted. Fig. 8 is a section on the line *z z*, Fig. 4.

Our invention relates to certain improvements in resawing-machines, having for their object the production of a machine capable of doing a greater variety of work and of doing ordinary work better than the machines heretofore in use; and our invention consists in a novel arrangement and construction of the feeding-rollers; in a new mode of combining the self-centering feeding-rollers, so that they may be adjusted; in the construction of the expansion driving-gearing, and in self-adjusting clamps.

Our invention also consists in the mechanical details of the construction, as hereinafter more fully set forth.

Our improved resawing-machine is illustrated in the accompanying drawings, in which *A A* are the side frames of the machine, *B B'* and *C C'* the feeding-rollers, and *D* the saw. The side frames are connected together at their forward ends by a transverse bed-plate, *E*, which supports the feeding-rollers, and toward the rear of the machine by the cross-bars *a a'*, Fig. 2. These cross-bars are connected together by or are cast in one piece with the longitudinal bars *b b'*, which carry the journals for the saw. Power is applied to the shaft *e*, carrying the saw, by means of the pulley *F*, and motion is transmitted to the feed-roll-driving shaft *e* by means of pulleys *d d'* and belt *d''*.

The belt *d'''* is used for reversing the motion of the feeding-rollers by means of the clutch *f*. The saw-shaft *e* is supported at a suitable distance above the upper part of the frame by means of journal-boxes, one of which is shown at *e'*, Fig. 2. The material to be sawed is fed through the machine against the saw between the feeding-rollers, passing over the supporting-plate *e'*, which is provided at its forward end with the friction-roller *g*. While passing through the machine the stuff is held and controlled by the clamps *G G'* and by the guides *H H'*, placed at each side of the saw.

The feeding-rollers *B C* and *B' C'* are supported by sliding plates *I I'*, which are attached to the bed-plate *E* by gibs *i i'*, Figs. 1 and 3, fitting over flanges on the sides thereof, so that the plates *I I'* and the feed-rolls may have a to-and-fro movement transversely to the line of feed, as represented by the dotted lines in Fig. 4.

In order to make the feed-rolls self-centering—that is, so that they may recede equally in opposite directions from the line of feed—we have connected the two plates *I* and *I'* together by the pinion and racks *j k l*, Figs. 1, 2, and 4. The rack *l* is attached to the plate *I* by means of a rod, *l'*, (shown in dotted lines in Figs. 2 and 4,) which passes within the hollow bed-plate *E*, and is attached to a lug, *j'*, projecting downward from the plate *I*. (See Fig. 7.) The rack *k* is attached to the plate *I'*. In consequence of this arrangement of the parts any motion of either of the plates *I* or *I'* will be transmitted to the other in an opposite direction. In order to permit of the shifting of the line of centers between the feed-rolls transversely across the machine, provision is made for moving the pinion *j*. The pinion *j* is supported by a stud on the slide *m*, which is arranged to be adjusted on ways attached to the bed-plate *E* or the side frame, *A*. A threaded rod, *o*, passes underneath the bed-plate and through the slide *m*. By turning the hand-wheel *n* on the rod *o* the position of the slide *m* is changed and the rolls *B C B' C'* are shifted bodily across the machine. They may thus be brought into any desired relation with the saw, while at the same time their self-centering arrangement is retained. The hub of the hand-

wheel n has a groove in it, into which is fitted a stationary piece, f' , Fig. 3, attached to the main frame of the machine, for the purpose of preventing longitudinal movement in the shaft o .

When the machine is to be used with the feeding-rollers B' C' stationary, this is accomplished in the following manner: The rack k is attached to the sliding plate I' by the rod J , Fig. 3, which is provided with a hand-wheel. A horizontal slot is cut in the bed-plate E to permit of to-and-fro motion of this rod. (See Fig. 3.) A lug, j' , Fig. 5, is provided on the lower side of the sliding plate, I' , into which the rod screws, and against which it binds the rack k by means of a shoulder on the rod.

When it is desired to use the machine for slabbing or for other purposes with the feeding-rollers B' C' stationary, the clamping-rod J is removed and the plate I' is rigidly fastened in any desired position on the bed-plate E by means of the rod g' , which screws into the outer end of the plate I' , and is provided with collars on each side of the end bar of the bed-plate E , by which it is prevented from sliding through the bed-plate. When the feeding rollers are arranged so as to be self-centering, one or both of the collars on the rod g' should be moved back.

The feed-roll B is supported on the plate I by an independent slide, K , which is arranged to slide on the plate I within a dovetail. The object of this arrangement is to allow the roller B to yield back over any irregularities in the lumber to be sawed by the machine. The upper end of the roller is supported by a bracket, h' , bolted to the slide K , and carrying at its upper end a sliding yoke, e'' , which reaches inward and supports the box at the top of the roller. The yoke e'' is fitted to the upper end of the bracket h' by a tongue and groove, so that the yoke may slide on the bracket. A spring on a threaded rod, j' , passing through the top of the bracket, holds the yoke e'' and the top of the roller B up to its work. The position of the yoke e'' may be adjusted by means of the rod j' , which is provided with a collar, bearing on the inside of a slotted lug attached to the outer end of the yoke. The collar on the outside of the slotted lug is loose on the rod. The yoke may, if desired, be readily fastened to the bracket h' by means of the clamping-screw i'' .

The slide K is pressed toward the board by a spring on the threaded rod j'' , which screws into the plate I , and is provided with a collar placed inside a lug on the outer end of the slide K , by which the motion of the slide K toward the board is limited. From this construction it will readily be perceived that the position of the roller B on the slide I may be adjusted by the threaded rod j'' , and that, if desired, the top of the roller B may be adjusted on either side of the perpendicular by means of the threaded rod j' .

The roller B' is arranged to slide on the plate

I' by means of the slide L . The position of the roller B' on the slide I' is adjusted by the threaded rod a'' , provided with a hand-wheel, b'' , and which screws into the plate I' . The slide L may be clamped to the plate I' by means of the screws c''' . The upper part of the roller B' is supported by the bracket h'' , bolted to the slide L , and provided at its upper end with a yoke, e''' , having an adjusting-screw, j''' , and a clamping-screw, i''' .

The roller C' is carried by the plate I' by a bracket bolted to the plate, and provided at its upper end with an adjustable yoke arranged in a manner similar to the adjustable yoke of the roller B' .

The roller C is supported on the plate I by a bracket bolted to the said plate, and provided at its upper end with a sliding yoke arranged to yield back on a spring on the threaded rod j' , Fig. 2, in a manner substantially similar to that already described in regard to the upper end of roller B . The feeding-rollers are all of them connected at their lower ends with their respective driving-shafts by a ball-and-clutch joint. The driving-shafts of the rollers B and B' are journaled on the plates K and L , respectively, and the driving-shafts of the rollers C and C' are journaled in the plates I I' , respectively, as shown at J' J'' , Fig. 7. These shafts extend downward to a sufficient distance through their bearings, and carry at their lower ends the driving-gearing o'' o''' o^4 o^5 , Fig. 4.

From the worm on the shaft e power is transmitted to the worm-gear f'' , which rotates on a stud fixed to the transverse bridge-tree f''' . The worm-gear f'' is provided on its upper side with a spur-gear, g''' , (shown by dotted circle, Fig. 6,) rigidly connected to it. Power is transmitted from the spur-gear g''' to the gears o''' and o^5 on the driving-shafts of the rollers B' C' , respectively, by means of the pinion r , which meshes with the gear r' rigidly attached to the stud t , which carries the intermediate gear, s . The stud t revolves in a suitable journal on the plate I' . The pinion r is supported by links (see dotted lines, Fig. 6, and V^4 V^5 , Fig. 7) attached respectively to the stud of the worm-gear and to the stud t . By means of these links the pinion r is kept all the time in mesh with the gear g''' and the gear r' , notwithstanding the motion of the stud t to and from the stud on which the gear g''' revolves. The gears o'' and o^4 , which drive the feed-rolls B C , respectively, are themselves driven from the gear g''' by the pinion u , which meshes with the gear u' on the lower end of the shaft of the gear o^4 . Motion is transmitted from the gear o^4 to the gear o'' by means of the intermediate gear, w'' , which revolves with the stud w''' , Fig. 2, journaled in the plate I . The pinion u is supported by expansion-links V^6 , Fig. 7.

By the arrangement of the expansion-gearing herein described we are enabled to use a worm and worm-gear for the transmission of motion from the driving-shaft e to the feed-

rollers, whereby we obtain a very powerful and easily-reversible feed-motion.

The sliding rod *v*, arranged across the front of the machine and provided with a handle, *W*, enables the operator to start and stop or reverse the feed-motion by means of the clutch *f*, Fig. 2.

Between the first and second pairs of feed-rolls are placed the vertical guards *V'' V'''*, the object of which is to enable the machine to saw short stuff, and to prevent the end of the board, after it has passed through the first pair of feed-rollers, from swinging out of line. The guards *V'' V'''* consist of suitable metallic plates connected by arms with the brackets *h' h''*, respectively. The arms which support the guards are attached to the brackets by clamping-screws passing through slots in the arms, so that the position of the guards may be adjusted with reference to the feeding-rolls *B B'*.

Immediately behind the second pair of feed-rolls, and a short distance in front of the saw, suitable curved clamps, *G G'*, are placed on each side of the board as it passes through the machine. The clamp *G'*, on the board or line side of the saw, is adjustably connected with the bracket which supports the feed-roller *C'*. Two arms, *k k''*, of suitable length, extend backward from the bracket of the feed-roll, *C'*. To the ends of these arms are attached, by screws passing through slots, the right-angled extension-pieces *l''*, Figs. 2 and 7.

Attached to the clamp *G'* are slotted arms *n' n''*, which are secured to the extension-pieces *l''* by means of bolts *g''* passing through slots. The clamp *G'* is arranged to be adjusted on the extension-pieces *l''* by means of the threaded rods *s' s''*, which are provided with hand-wheels having grooves fitted into slots in lugs on the extension-pieces. By means of the threaded rods *s' s''* the position of the clamp *G'* with reference to the feed-roller *C'* may be adjusted. The clamp *G'* may be adjusted to and from the saw, to compensate for the wear thereof, by means of the bolts passing through the slots in the ends of the arms *k k''*.

The clamp *G*, on the opposite side of the saw, is attached to the bracket of the feed-roll *C* in a manner similar to that already described with regard to the clamp *G'*, except that provision is made for allowing the clamp *G* to yield back over any irregularities in the material fed through the machine. This result is accomplished by attaching the clamp to the extension-pieces *l''* by means of arms *m' m''*, which slide in suitable guideways *W' W''*, formed on the extension-pieces.

Into the extension-pieces *l''* are screwed the threaded rods *x x'*, each of which is surrounded by a spiral spring.

To the arms *m' m''* are pivoted the connections *y y'*, which are provided at their outer ends with slotted lugs embracing the rods *x x'*. The pressure of the springs on the rods *x x'* is transmitted to the clamp *G* through the con-

nections *y y'* and the arms *m' m''*. The arms *m' m''* are fitted in the guideways *W' W''*, so as to permit the clamp *G* to yield back more at its top than at its bottom, or vice versa, in case the lumber passing through the machine should be thicker on one edge than the other. In order to accomplish this result, the connections *y y'* are pivoted to the arms *m' m''*, and are loosely connected to the threaded rods *x x'* by collars bearing on the inside of the lugs at the ends of the connections. The position of the clamp *G* with reference to the roller *C* may be varied. By this arrangement of parts the clamp *G* may be held vertically or inclined at an angle in either direction from the perpendicular, and its position may be made to correspond with that of the feed-rollers *B* and *C*.

It will be observed that, in consequence of the arrangement of the feeding-rollers and clamps herein described, provision is made to compensate for all kinds of irregularities presented by the lumber to be sawed.

On each side of the saw are placed the guides *H H'*. These guides are designed more particularly for use in sawing short stuff, which passes inside the guides and between them and the spreaders *M M'*. The guides and spreaders are supported by suitable standards, *a'' b''*, which are attached to the longitudinal bars *b b'*. At their upper ends the standards *a'' b''* form horizontal plates on the same level with the feed-plate *c'*, which extends outward from the saw for the purpose of forming a supporting-surface for the material to be sawed. The guides *H H'* are secured to these horizontal plates by means of bolts passing through slotted holes in flanges attached to the guides at their lower edges. The guides *H H'* may be readily removed when the machine is used under circumstances where their employment is unnecessary. By means of the guides *H H'* channels are formed on each side of the saw, through which pieces of sawed material of short length travel, each piece being pushed forward by the next succeeding one without delay or mishap.

M M' are the spreaders, which consist of vertical plates located at or near the rear side of the saw and operating to relieve friction on the collar and stiffening-plate. The material, after being sawed, passes between the guides *H H'* and the spreaders *M M'*.

We do not claim herein the construction of the saw; but we reserve to ourselves the right of filing a subsequent application on the subject-matter thereof.

We are aware that the feeding-rollers of resawing-machines have been heretofore connected by a pinion and racks, so as to be self-centering; but we are not aware that parts arranged as herein shown (the pinion being made adjustable across the machine so as to shift the central line between the rolls laterally) have been heretofore employed.

We claim—

1. In combination with the saw *D*, the spread-

ers M M' and the outside guides, H H', forming a channel on each side of the saw for the passage of short stuff, substantially as described.

5 2. In combination with the saw D and feeding-rollers B B' C C', the spreaders M M' and the outside guides, H H', substantially as described.

10 3. In combination with the saw D and feeding-rollers B B' C C', the guards V'' V''', spreaders M M', and outside guides, H H', substantially as and for the purposes set forth.

15 4. In combination with the yielding clamp G, the arms m' m'', arranged to slide loosely in gibs W' W'' on the extension-pieces l' l'', and connections y y', whereby unequal motion of the upper and lower ends of the clamp is permitted, substantially as described.

20 5. In combination with the saw D, one or more pairs of self-centering feeding-rollers, when connected together by the racks k and l, and the adjustable pinion j, substantially as described.

6. In combination with suitable feeding-rollers, the sliding plates I I', racks k and l, 25 movable pinion j, and adjusting-screw o, substantially as described.

7. In combination with the saw D, the feeding-rollers B C and supporting-plate I, carrying fixed roller C' and independently-adjustable roller B', substantially as described. 30

8. In combination with the saw D, the sliding supporting-plates I I', fixed feed-roller C', adjustable feed-roller B', fixed roller C, and yielding roller B, substantially as described. 35

9. The combination of the saw D, the self-centering feeding-rollers B' C' and B C, the latter being provided at their upper ends with the sliding yoke e'' and spring j', substantially as described.

JOHN CONNELL.

VALENTINE DENGLER.

Witnesses:

GEO. B. SELDEN,

WM. REBARZ, Jr.