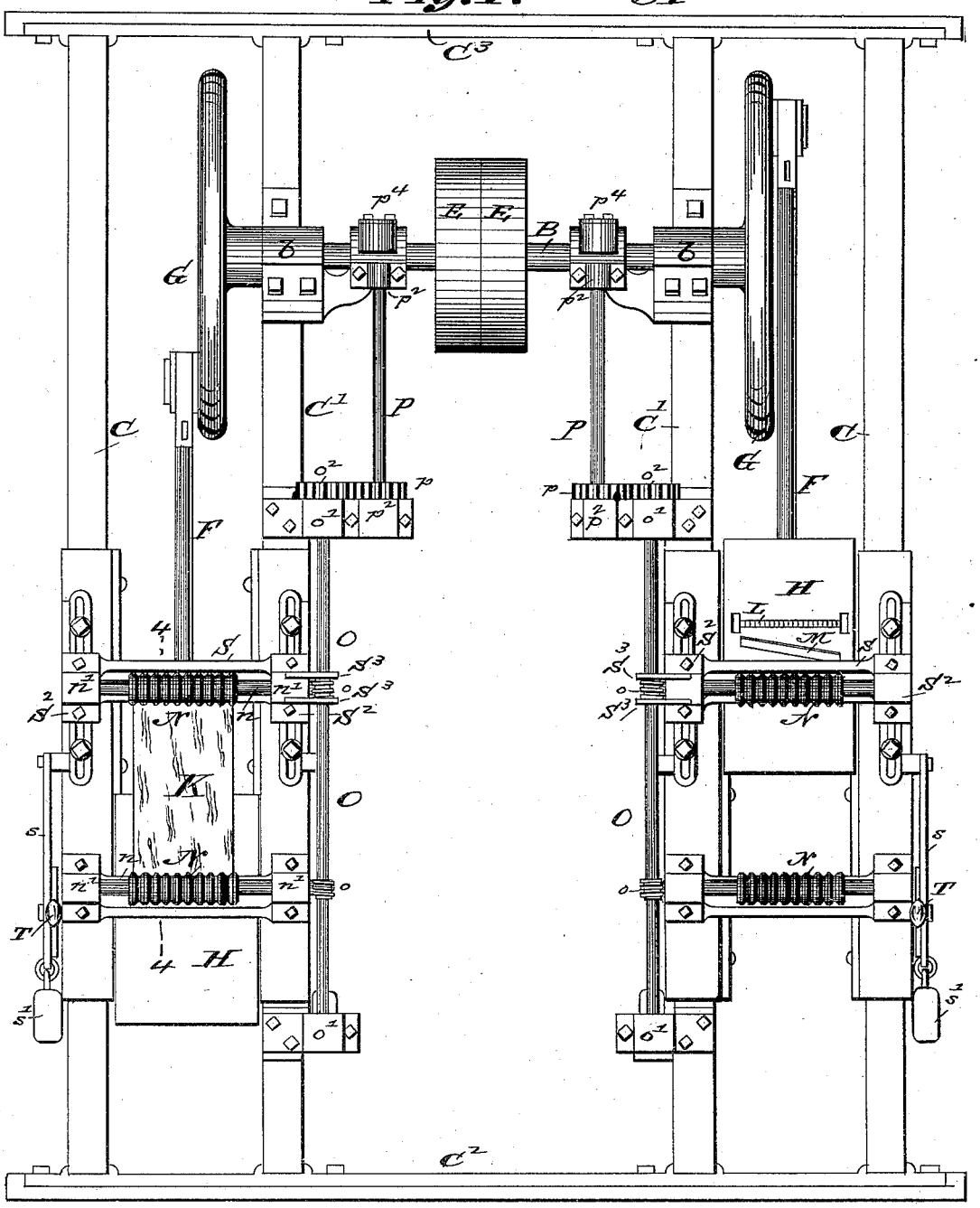
(No Model.) 3 Sheets—Sheet 1.

P. HENRY.

EXCELSIOR MACHINE.

No. 307,646. Patented Nov. 4, 1884.

Fig. 1.



Attest!
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S. E. Logan.

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by C. Dewey
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(No Model.) 3 Sheets—Sheet 2.

P. HENRY.

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Fig. 2.

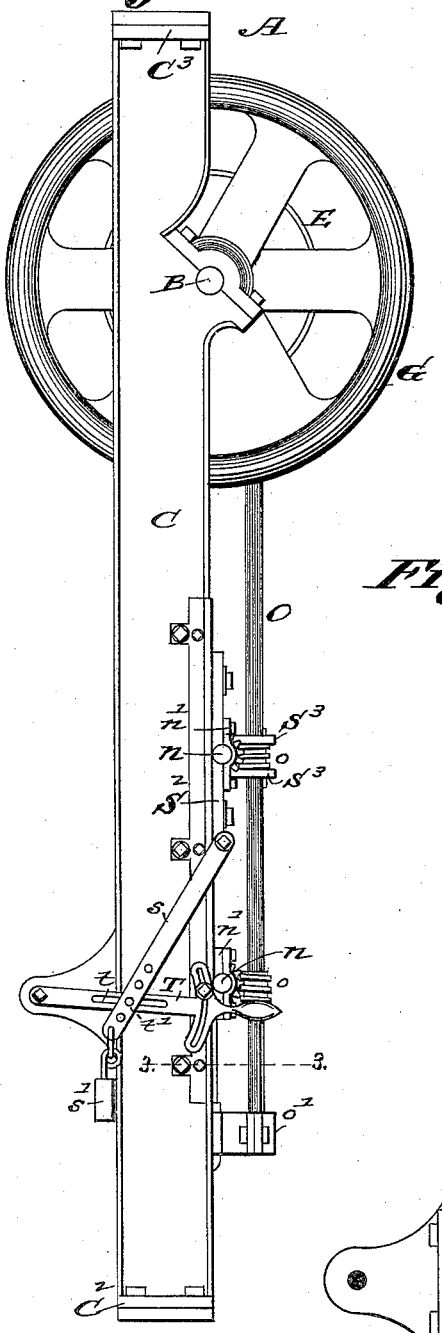


Fig. 3.

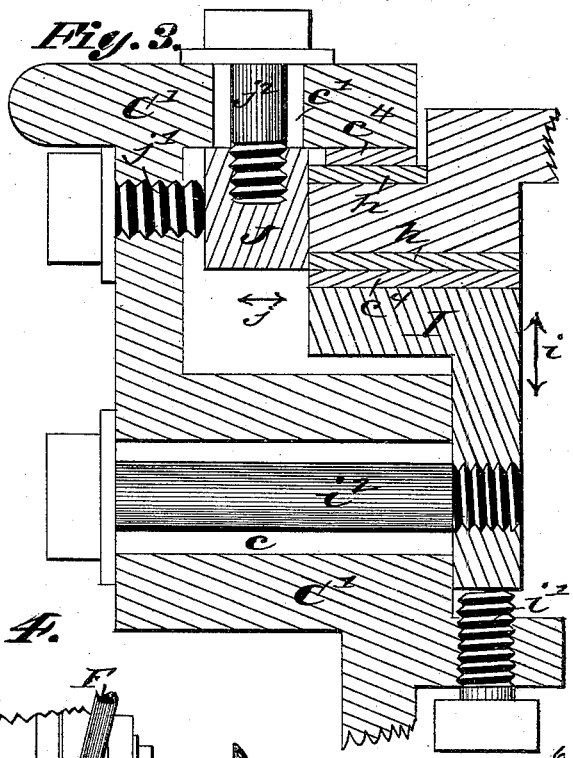


Fig. 4.

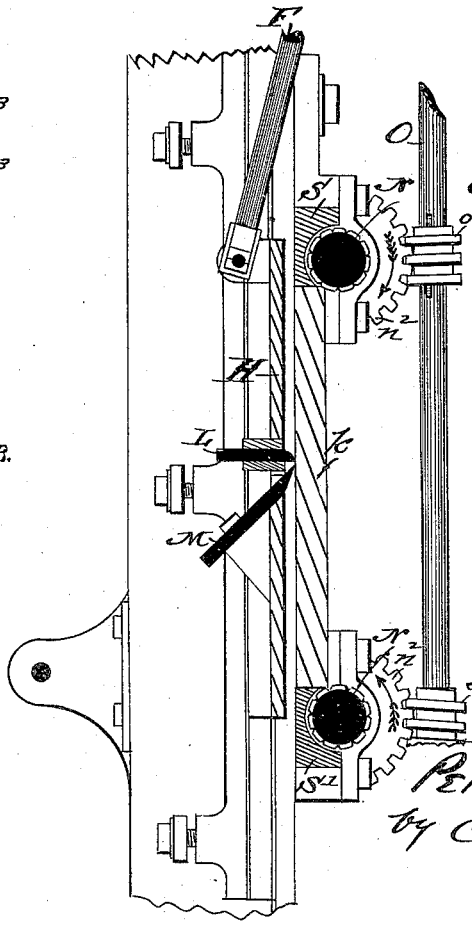


Fig. 5.

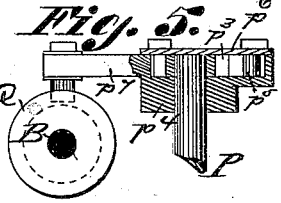


Fig. 6.

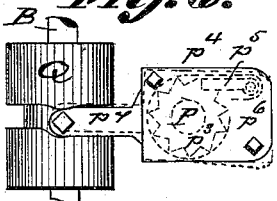
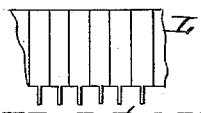


Fig. 7.



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(No Model.) 3 Sheets—Sheet 3.

P. HENRY.

EXCELSIOR MACHINE.

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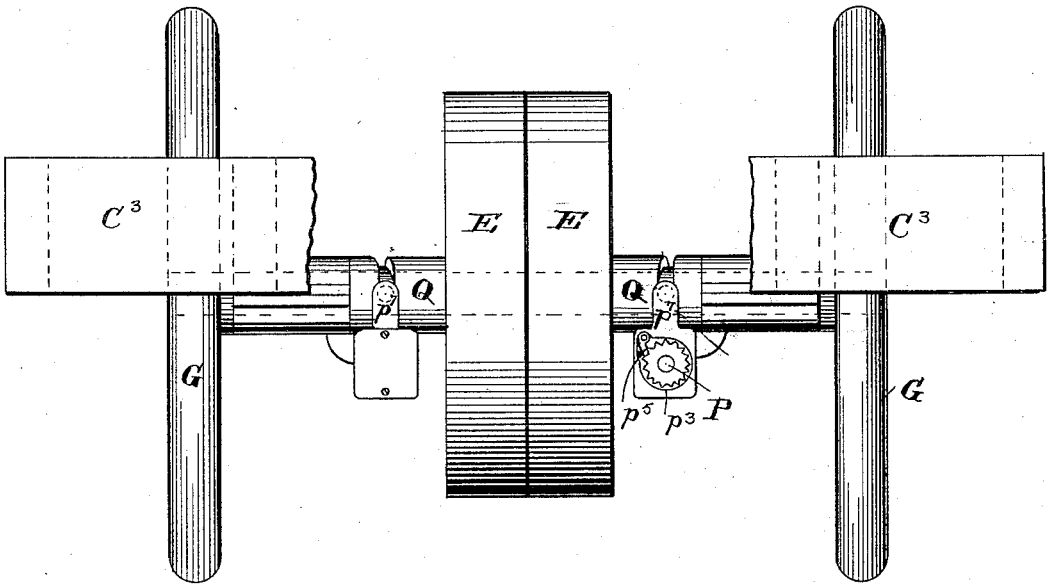
Fig. 8.



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UNITED STATES PATENT OFFICE.

PETER HENRY, OF ST. LOUIS, MISSOURI.

EXCELSIOR-MACHINE.

SPECIFICATION forming part of Letters Patent No. 307,646, dated November 4, 1884.

Application filed August 18, 1883. (No model.)

To all whom it may concern:

Be it known that I, PETER HENRY, of St. Louis, Missouri, have made a new and useful Improvement in Excelsior-Machines, of which the following is a full, clear, and exact description, reference being had to the annexed drawings, making part of this specification, in which—

Figure 1 is a front elevation of the improved machine. Fig. 2, a side elevation; Fig. 3, a horizontal section, upon an enlarged scale, on line 3 3 of Fig. 2; Fig. 4, a vertical section, upon an enlarged scale, on the line 4 4 of Fig. 1; Figs. 5 and 6 details, being respectively a side and a top view of the mechanism employed in transmitting the motion of the main driving-shaft to the feed-shaft; Fig. 7, a detail, being a view showing a portion of the scoring-knife; and Fig. 8 is a plan view of one half of the machine with the top bar or tie C^3 partially removed.

The same letters of reference denote the same parts.

The prevent invention has relation to the means employed in adjusting the cutter-head and to the means employed in feeding the block to the cutters and holding the remnant of the block that passes the feed-rolls. The general construction of the machine is also considered an improvement upon excelsior-machines as hitherto made.

Referring to the drawings, A, Figs. 1 and 2, represents the improved machine. The machine is double-acting, there being two sets of cutters, one of which is acting while the other is being moved into position to act, and the blocks from which the excelsior is prepared are fed alternately to the cutters.

B represents the main driving-shaft. Its bearings *b b* are in or upon the uprights C′ C′.

The frame of the machine consists, substantially, of the uprights C C C′ C′, which are suitably secured to the base or floor C^2 and connected above by means of the tie C^3. Power is communicated to the driving shaft by means of the pulleys E E.

F F represent the connecting-rods leading from the cranks G G to the cutter-heads H H, respectively. The cutter-heads in their reciprocating movement are guided by bearings upon the uprights C′ C′.

To enable the excelsior to be cut in shreds of uniform width and thickness and of the full length of the block, the cutters must be adjusted accurately, and to provide for this is, as stated, one of the prominent features of this improvement. The bearings, therefore, of the cutter-head are made adjustable in two directions—namely, toward and from the block from which the excelsior is cut and in a direction at right angles thereto. This is shown clearly in Fig. 3.

I and J represent bearings similarly attached to each of the uprights C′ C′. The bearing I can be adjusted in the directions indicated by the double-headed arrow *i*, and the bearing J can be adjusted in the directions indicated by the double-headed arrow *j*. When it is desired to set the cutter-head nearer to the block K from which the excelsior is produced, the bolt *i′* is screwed into the upright C′, causing the bearing I to be moved in the direction of the block K. The bolt i^2 holds the bearing I against the upright, in whatever position it may be moved into, by means of the bolt *i′*, and to provide for the movement of the bearing I and bolt i^2 the upright C′ is slotted at *c*, substantially as shown. The cutter-head is adjusted in a transverse direction by means of the bolt *j′*. When it is desired to move the cutter-head, for instance, to the right, as seen in Fig. 3, the bolt *j′* is screwed into the upright, causing the bearing J to be moved to the right, which in turn causes the cutter-head to be moved in that direction, as desired. The bolt j^2 serves to hold the bearing J in place against the upright C′, in whatever position it may be moved into, by means of the bolt *j′*, and to provide for the movement of the bearing J and the bolt j^2 the upright C′ is suitably recessed at *c′*, substantially as shown. In this manner the cutter-head can be adjusted accurately either to the right or the left, and toward or from the block K, and the excelsior material, in consequence, can be cut evenly and properly. Both the cutter-head and upright are suitably faced with the bearing-strips c^4 *h*, preferably of steel. The cutter-head is provided with the usual scoring-knife, L, and the shaving-knife M. The block K is fed to the cutters by means of the feed-rolls N N. The feed-roll shafts *n n* are

journaled in the bearings $n' n'$, and are provided with the gears n^2 n^2, which in turn engage with the worms $o\,o$ upon the shaft O. This last-named shaft turns in the bearings $o'\,o'$, and is provided with the gear o^2, which engages with the gear p on the shaft P. The shaft P turns in the bearings p^2 p^2, and at its upper end is provided with a ratchet, p^3, Figs. 5 and 6. The driving-shaft B is provided with a grooved cam, Q, Figs. 5 and 6. The driving-shaft, through the cam Q, operates at proper intervals a dog, p^5, which in turn acts upon the ratchet p^3 upon the shaft P. The motion of the driving-shaft is thus communicated to the feed-rolls N N, and the various parts are so constructed and operated as to cause the block K to be fed toward the cutters just before the cutters are about to operate.

To enable the remnant k of the block K to be suitably held in the machine after it has passed the feed-rolls, the following means are employed.

S represents what I term the "pressure-bar," which is capable of being drawn down in its bearings, so as to bind the block K after the latter shall have passed the feed-rolls, as shown in Fig. 4. The pressure-bar S, at its end, by means of the rod s, is connected with the weight s', and as soon as the block K has passed the feed-rolls the weight operates, through the rod s, to draw the bar S downward, and thereby to press upon and confine the block K, whose lower end at that time rests upon a stationary bar, S', Fig. 4. In this manner the remnant of the block K is retained in position in the machine and prevented from causing any damage to the machinery until the attendant can withdraw it. To raise the pressure-bar again, the lever T, Figs. 1 and 2, is employed. The rod s is, as shown in Fig. 2, connected with the lever T, the lever T being slotted at t to receive a pin, t', which passes through the rod s and into the slot t. By lifting the free end of the lever T the pressure-bar S is raised, as desired. The bar S and the upper feed-roll are permanently connected and move upward and downward together. To this end the bar S, at its ends, is attached to the slides S^2 S^2. These slides contain the feed-roll-shaft bearings, and they can be moved vertically upon the uprights C' C'. The slides are also supplied with the projections S^3 S^3, which come respectively above and beneath the upper worm, o. This upper worm, o, can be slipped upward and downward upon the shaft O, and when the bar S and upper feed-roll are moved upward and downward, as described, the worm o moves with them. The shaft O has a suitable spline, which engages with the worm, causing the worm to rotate with the shaft. The present machine, as stated, is a double-acting one, and the cutters are adapted, as seen in Fig. 4, to cut on the upward stroke of the cutters. From this the following advantage accrues: As the cutter head and knives are moved upward at one side of the machine, the cutter-head on the opposite side of the machine and the mechanism immediately therewith connected are moved downward. The weight of the descending mechanism therefore operates to counterbalance the weight of the ascending mechanism, and the result is, the operation of cutting the wood is greatly facilitated.

The mechanism used in transmitting the motion of the main driving-wheel to the feed-shaft is understood by referring to Figs. 5 and 6.

Upon the upper end of the shaft P a box, p^4, is journaled. The box has a projection, p^7, which engages in the groove of the cam Q. The rotary movement of the cam Q therefore causes the box p^4 to oscillate upon the shaft P, as indicated by the dotted lines in Fig. 6. The ratchet p^3, which is fastened to the shaft P, is contained within the box p^4. The pawl p^5 is pivoted to the box p^4. As the box p^4 oscillates in one direction the pawl is moved with it and the point of the pawl rides upon the teeth of the ratchet. As the box is moved in the other direction the pawl engages in the ratchet, causing it and the shaft P to rotate, and, through the mechanism heretofore described, to operate the feed-rolls. A cover, p^6, serves to inclose the pawl within the box p^4 and protect it from the dust incident to the use of the machine.

I claim—

1. In an excelsior-machine, the combination, with the uprights of the main frame and a reciprocating cutter-carrying head, of two feed-rolls, N N, a pressure-bar held down by a weight, a supporting-bar, S', slides S^2, projections from said slides, worm-screws $o\,o$ on shaft O, gears o^2 p, shaft P, a ratchet and pawl at the upper end of the latter, arm p^7, and a cam, Q, on the main driving-shaft, substantially as described.

2. In an excelsior-machine, the combination, with the shaft B, of the grooved cam thereon, the shaft P, arranged with its axis at right angles to the direction of the axis of the driving-shaft and geared to the feed-rollers, which are at right angles to it and turning in bearings p^2, the ratchet p^3, the dog p^5, and the devices described for transmitting intermittent rotation to the feed-rolls, which adjusts the staff to the cutters, all constructed and adapted to operate substantially as described.

3. In an excelsior-machine, the combination, with the uprights C' and cutter-head, faced as described, of the adjustable bearings I J, the bolts i and j, bearing against the rear edges of the said bearing-blocks, respectively, and the bolts i', i^2, j', and j^2, said bolts i^2 and j^2 being secured in such blocks I and J, and passing through slots in the frame, all constructed and adapted to operate substantially in the manner and for the purposes specified.

PETER HENRY.

Witnesses:
C. D. MOODY,
S. E. LOGAN.