

No. 685,413.

Patented Oct. 29, 1901.

J. H. STEWART.
MATCH MAKING MACHINE.

(Application filed June 11, 1900.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1.

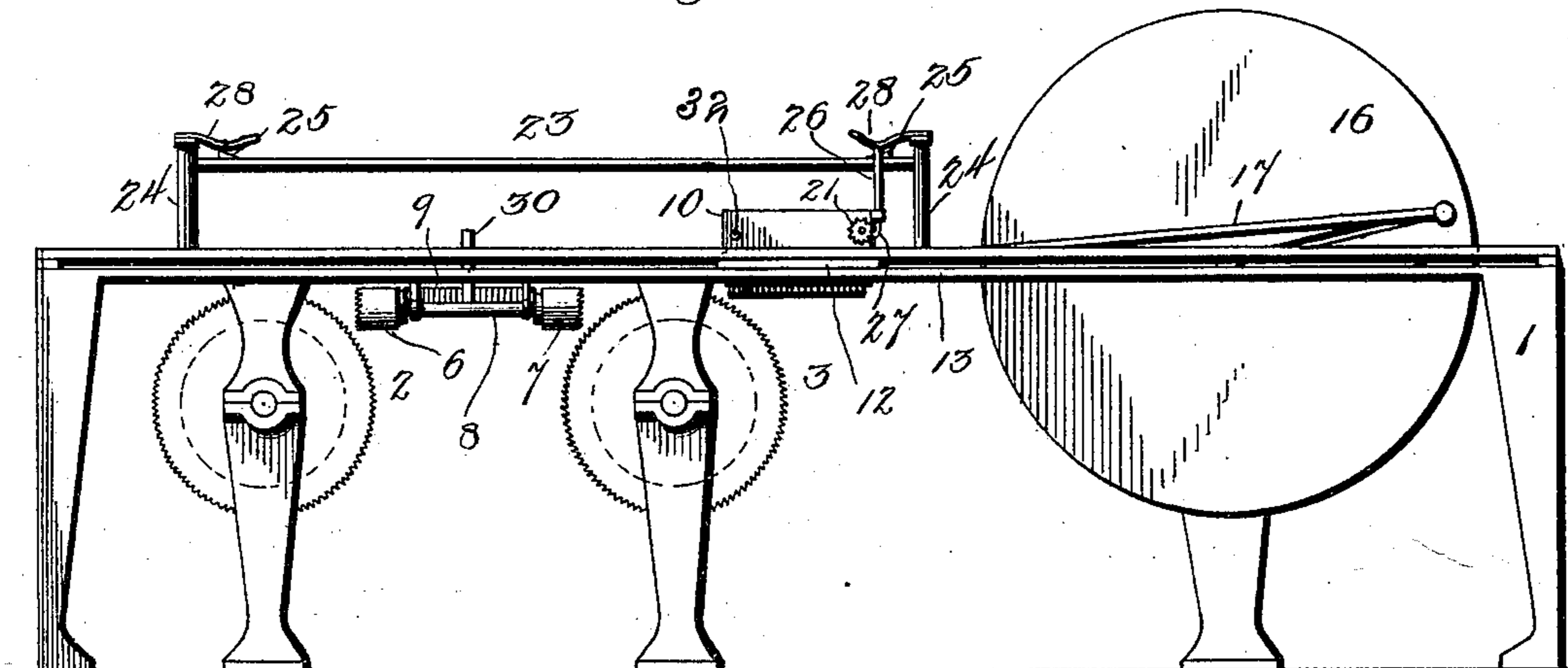


Fig. 2.

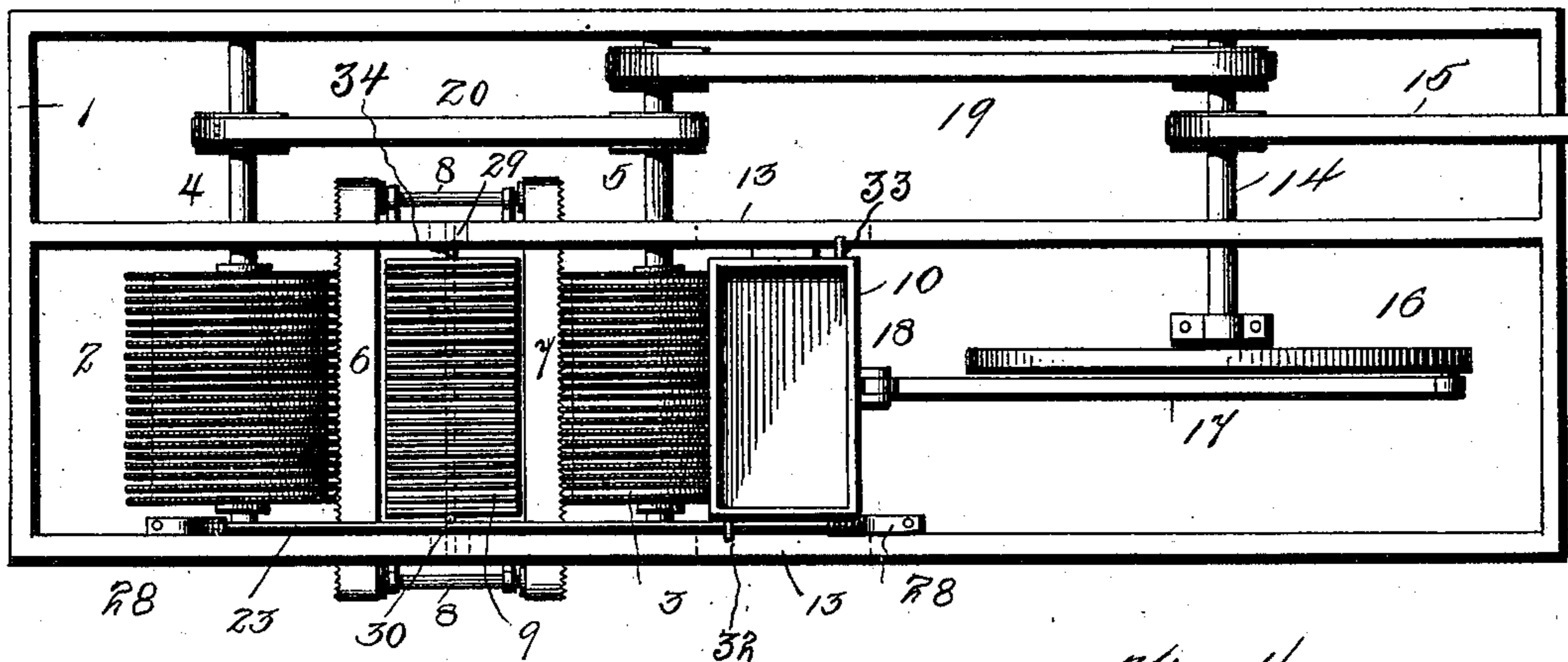


Fig. 3.

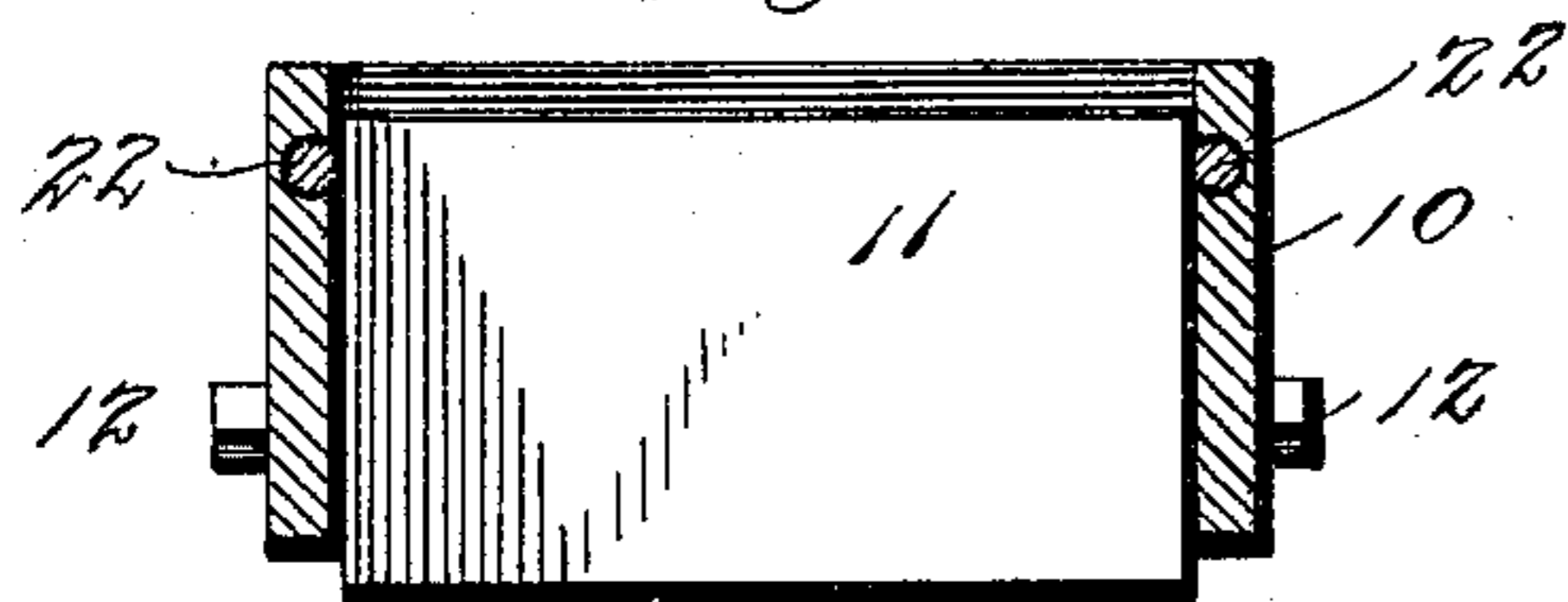


Fig. 4.

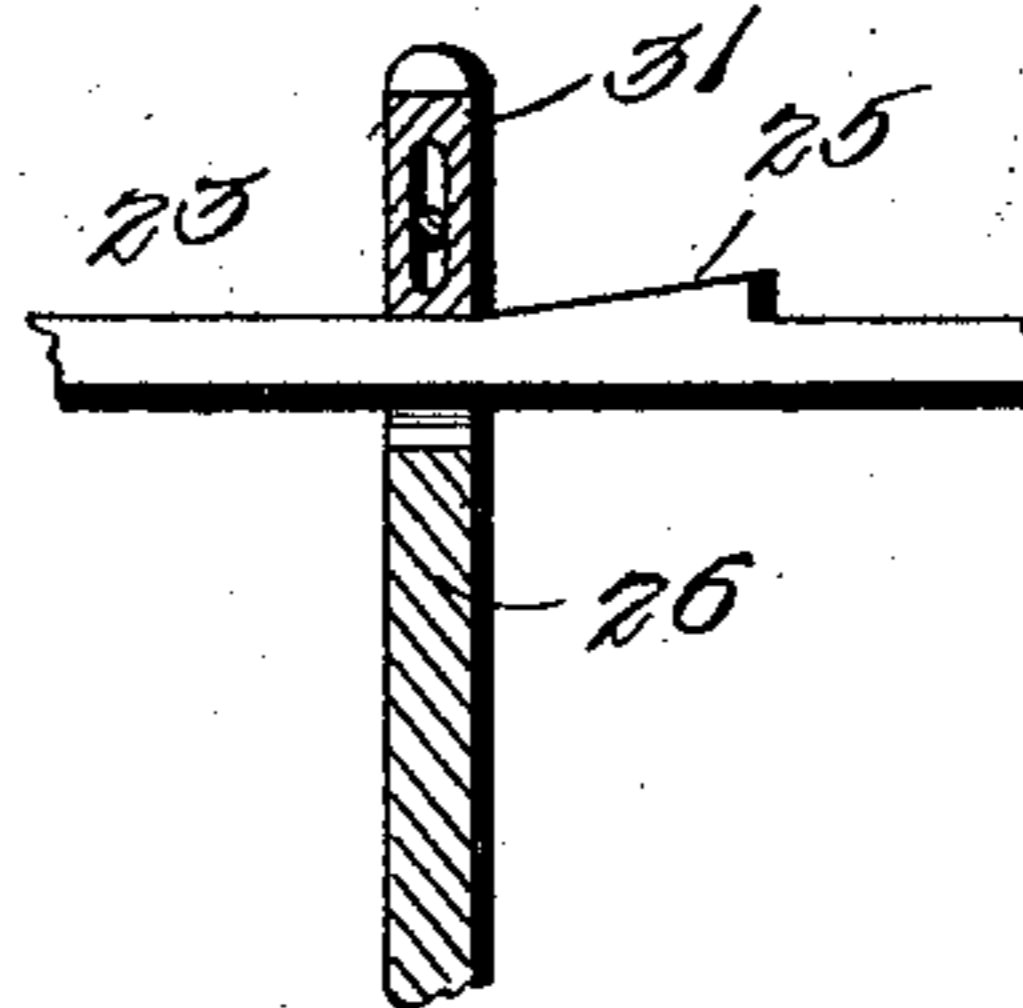
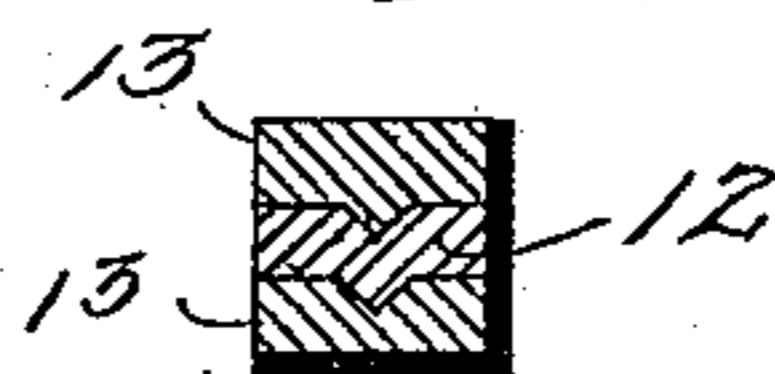


Fig. 5.



Witnesses
T. L. Hochstetler
G. A. Berry

Inventor
John H. Stewart
by Samuel B. Brock
Attorney

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Fig. 6.

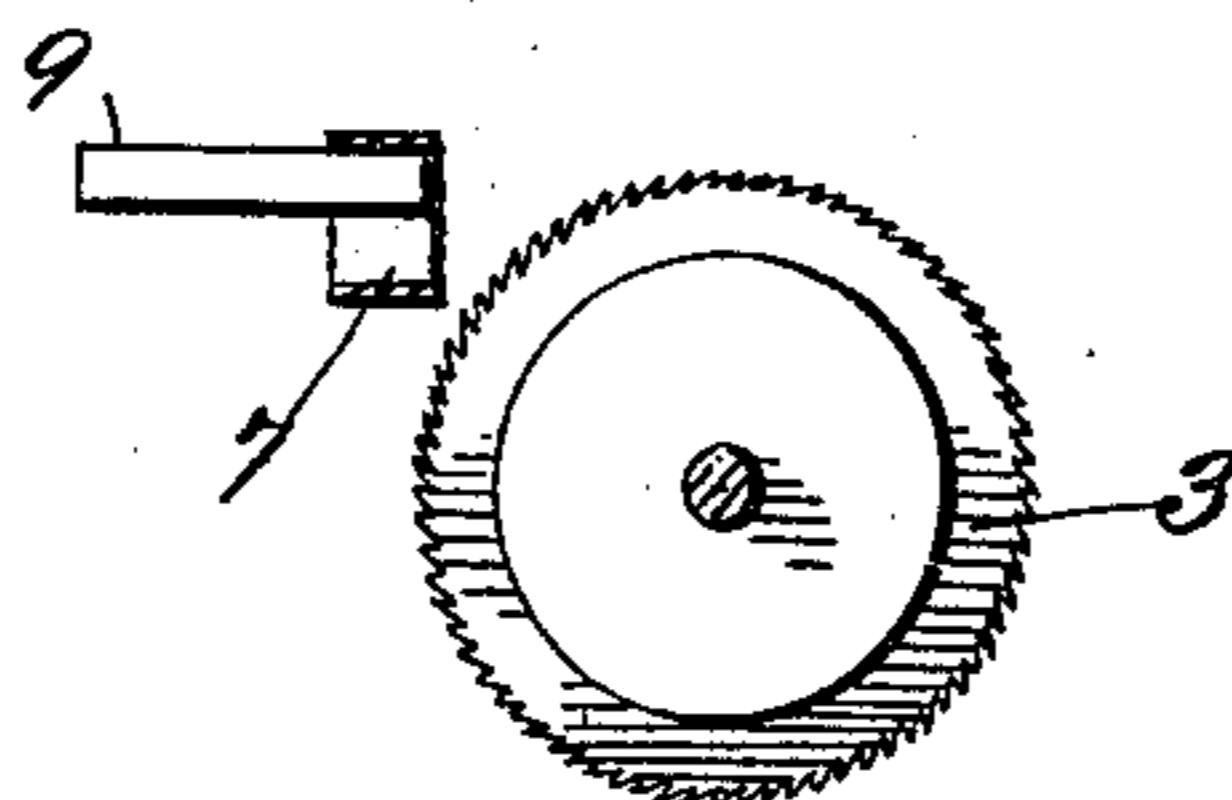
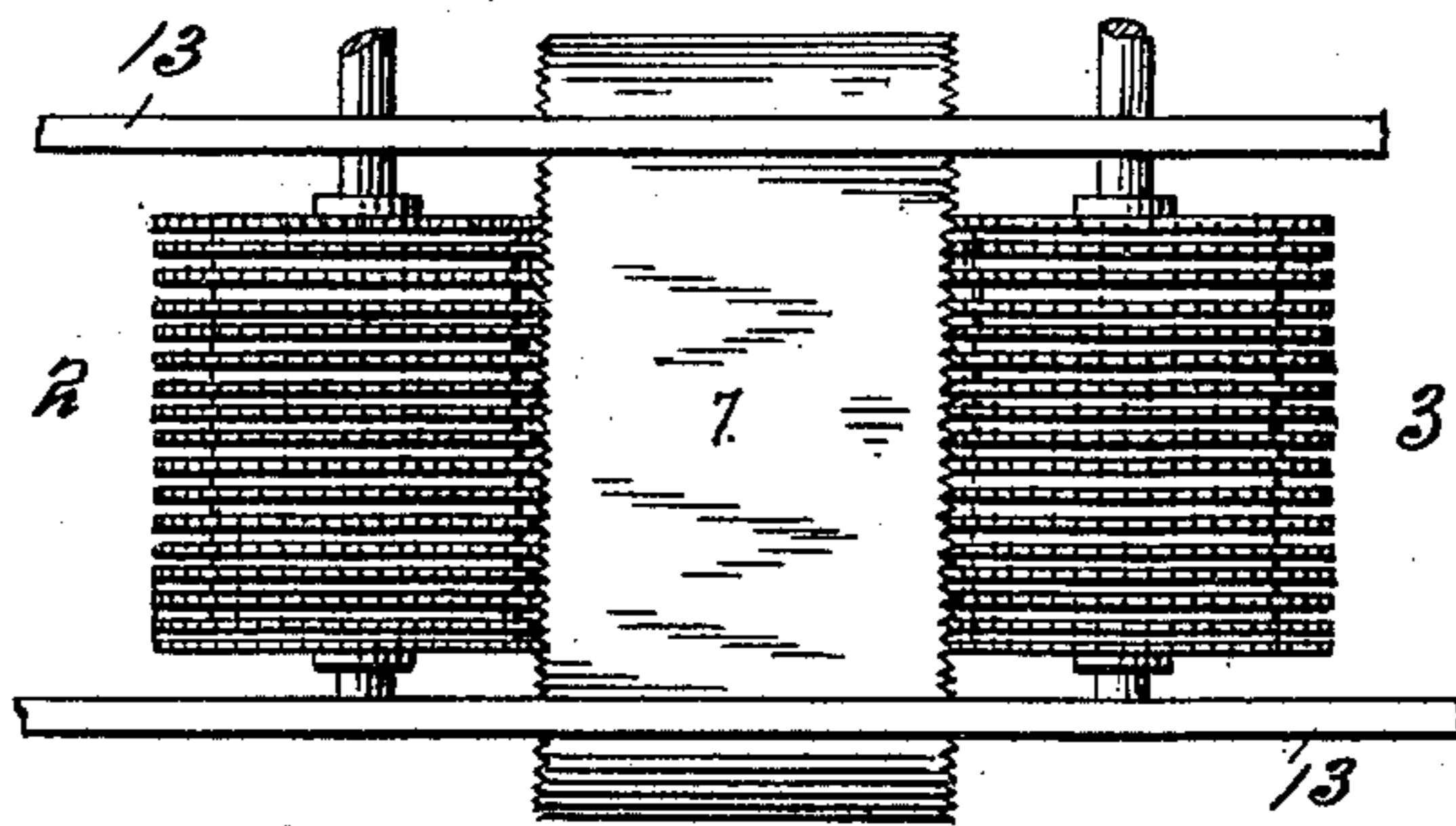


Fig. 7.



Witnesses
Chas. K. Davies.
Lilian Brock

Inventor
J. H. Stewart
by F. B. Brock
Attorney

UNITED STATES PATENT OFFICE.

JOHN H. STEWART, OF WILLIAMSPORT, PENNSYLVANIA, ASSIGNOR OF
THREE-FOURTHS TO WILLIAM L. BEAR, JOHN S. FURST, AND R.
CLARK MONTELIUS, OF WILLIAMSPORT, PENNSYLVANIA.

MATCH-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 685,413, dated October 29, 1901.

Application filed June 11, 1900. Serial No. 19,903. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. STEWART, of Williamsport, county of Lycoming, State of Pennsylvania, have invented certain new and
5 useful Improvements in Match-Making Machines; and I do hereby declare the following to be a full and clear description thereof.

Figure 1 represents a side elevation of a match-making machine to which I have applied my improvements. Fig. 2 is a top plan
10 view of the same. Fig. 3 is a detailed sectional view of the carriage. Fig. 4 is a detailed sectional view of the carriage-adjusting mechanism. Fig. 5 is a detailed sectional view of the
15 carriage-ways in the frame. Fig. 6 is an elevation in detail of a modified form of table. Fig. 7 is a detail plan view, with parts broken away, showing two saw-gangs and the band-saw having teeth on both edges.

20 In the drawings, 1 represents a table or framework adapted to carry the operative parts of the machine. Upon the table or within standards connected therewith is carried a double series of gang-saws 2 and 3, each
25 gang comprising a plurality of saws of any desired number, separated from each other by a series of washers in order to uniformly space the saws a given distance apart, the series of washers being secured in place upon
30 the saw-arbors 4 and 5 by suitable collars or nuts.

6 and 7 represent two endless band-saws mounted upon horizontal arbors 8. These band-saws are arranged to cut at right an-
35 gles to the cutting action of the gang-saws.

9 is a table having a series of compartments thereon, the partitions forming said compartments being of the same thickness and spaced the same distance apart as the gang-saws 2
40 and 3 in order that the strips or splints of wood cut by the gang-saws may register and pass into the corresponding compartments upon the table.

10 is the block-carriage, preferably comprising a hopper-shaped receptacle adapted to receive a uniform-shaped block of wood 11,
45 from which the match-splints are to be cut. This carriage is provided with extending bearings 12, which extend into the ways 13 on the

top of the table, so as to reciprocate or gig 50
back and forth over the saws 2, 3, 6, and 7.

14 is a counter-shaft mounted upon the table, adapted to receive motion from the drive-
belt 15. Shaft 14 is provided with a crank-
arm or slotted wheel 16, having a pitman 17, 55
adjustably mounted in the slot and pivoted at 18 to the carriage 10 in order that the reciprocating movement may be given to the carriage over the series of saws. The slot in the wheel 16 permits the adjustment of the
60 movement of the carriage.

19 and 20 represent a series or system of belting and pulleys connecting shaft 14 with
arbors 4 and 5 for the purpose of driving the
gang-saws. The means for driving the ar- 65
bors 8 of the band-saws are not here shown; but it will be understood that any system of driving not only the band-saws, but the gang-
saws and carriage, suitable for the purpose
may be adopted. 70

Provision is made for automatically lowering the block 11 in the carriage 10 as it
passes over the gang-saws a distance equal to the thickness of the splints desired to be cut.
A means for effecting this step-by-step ad- 75
justment is shown.

21 is a ratchet-wheel mounted on a bearing in the carriage, which bearing also carries one
or more rolls 22, preferably having serrated
teeth upon the periphery, for the purpose of 80
engaging and adjustably setting the block 11.

23 is a rail carried by standards 24 upon the table 1. The rails 23 are provided with
inclines 25 near each end. The carriage 10
carries an upright 26, adapted to have an up- 85
and-down movement upon the carriage. The lower end of the upright 26 carries a spring-
pawl 27, adapted to spring past the teeth of the ratchet 21 in its downward movement,
but which engages the ratchet in its upward 90
movement, causing the ratchet to rotate, and with it the serrated roll 22, which roll feeds the block 11 downwardly a distance equal to the thickness of the next series of splints to be cut from the block. 95

28 is a spring acting to force the upright 26 downwardly.

In Figs. 1 and 2 the table 9 is preferably

mounted upon a shaft 29, so as to tilt in either direction. When the carriage passes from left to right in Fig. 1, the projection 32 upon the carriage engages the arm 30, rigidly attached to the tilting table, and tips it. When the carriage passes to the left, the projection 33 on the opposite side of the carriage engages the arm 34 on the opposite side of the table and tilts it in the opposite direction, whereby the splints are discharged from the table at each stroke of the carriage. The arms 30 and 34 on table 9, while rigidly attached thereto, are flexible in themselves, whereby when the carriage passes to the left the pin 32 will ride over lever 30, and the table is prevented from tilting by the block in the carriage being directly over the same. In like manner the lever 33, when the carriage moves to the right, rides over flexible lever 34, and the block in the carriage prevents any movement of table 9.

When a single band-saw is used, the partitioned table 9 is preferably stationary, as shown in Fig. 6. In this figure the table is shown extending beneath the band-saw, so that the match-splints received therein are supported against lateral strain when the band-saw 7 is cutting through from the bottom of the block 11. The splints are removed from the stationary table by the movements of the carriage which causes new splints to be cut, and the splints previously cut are pushed along the table by those cut at subsequent operations. Fig. 7 shows the multiple-saw gang and a single band-saw 7, which in this case has teeth on each edge, whereby the splints will be cut from the block in both directions of carriage travel. The table in this figure is not shown, being beneath the band-saw. It may be a stationary table similar to that shown in Fig. 6.

In operation the block is set so that the gang of saws will cut a series of incisions in the lower edge thereof equal to the thickness of the match-splint to be cut—say one-sixteenth of an inch. After the carriage 10 has passed the gang-saws 3 the lower sawed edge of the block comes into contact with the horizontal band-saw 7, and a series of splints corresponding to the number of circular saws in the gang are cut off and passed into the corresponding divisions on the table. When the carriage has passed over the table 9, a projection thereon strikes the arm 30 and tilts the table, so as to discharge the splints. The subsequent manipulation of these splints need not be here described. After the carriage 10 has passed the gang-saws 2 the upright arm 26 comes in contact with the incline 25 and lifts said upright, thereby rotating the ratchet 21 and the roll 22, which causes the block 11 to descend a distance equal to the thickness of the next series of splints to be sawed. The continuous revolution of the wheel 16 thereupon draws the carriage back again, causing the gang-saws 2 to cut the next series of incisions in the block 11, after

which the band-saw 6 cuts the splints off and they are forced onto the table 9. The carriage as it passes to the right again engages the arm 30 of the table 9, tilting the same. When the carriage again arrives at the extreme right of its stroke, the upright 26 is again raised by the wedge 25 and the block again fed downwardly the distance of the thickness of the next cut to be made. This operation is repeated upon each stroke of the carriage until the block is converted into match-splints.

For the purpose of securing an adjustable feed downward of the block in the carriage I provide the upright 26 with an adjustable block 31, which is adapted to be set at any required distance by means of a slot and pin to vary the feed-action of the roll 22 through the ratchet 21, upright 26, and cam 25.

Fig. 5 represents the detail of the carriage-way and bearings in the carriage, the grooves being formed upon the upper side of the lower way and upon the upper side of the bearing of the carriage, so that no oil can escape from the grooved bearings.

While I have described my invention in connection with double gang-saws and double band-saws, yet I propose to use my invention in connection with a single gang-saw and a single band-saw, the block in the carriage being cut when the carriage is moved in one direction only and then giggered back.

While I have only shown one exemplifying means for carrying out my invention, I desire it to be understood that modifications and changes may be made in the details of the machine within the scope of the claims herein made. I also propose to provide a table which will extend under the band-saws, so that the partitions upon the table can support the lateral strain upon the splints while in the act of being cut from the block, as shown in Fig. 6.

What I claim as new, and desire to secure by Letters Patent, is—

1. In a match-splint-making machine, the combination of a frame, a gang of saws carried by the frame, a carriage adapted to hold the block to be reciprocated over the saws, and means for feeding the block downwardly in the carriage, and a band-saw disposed at right angles or transversely to the gang-saws.

2. In a match-splint machine, the combination of a saw-gang, a reciprocating carriage, a table adapted to receive the match-splints having partitions therein, and a band-saw adapted to travel transversely across the face of the table.

3. The combination of a gang-saw, a reciprocating carriage, a band-saw, and a tilting splint-receiving table, substantially as set forth.

4. The combination, in a match-splint machine, of two saw-gangs, a band-saw adapted to travel at right angles between the same, and a splint-receiving table, substantially as set forth.

5. In a match-splint-making machine, the

combination of a gang-saw, a band-saw, a reciprocating carriage, means for adjustably setting the block in the carriage for each throw of the same, and means for varying the feed movement of the block in the carriage.

6. In a match-splint machine, means for cutting the block longitudinally, a reciprocating carriage, a table adapted to receive the splints having partitions therein, which support the splints during transverse cutting, and means for cutting the block transversely, moving transversely across the table-partitions.

7. In a match-splint machine, the combination of a saw-gang, a reciprocating carriage, a splint-receiving table having partitions therein which support the splints during transverse cutting, and means for cutting the block transversely, moving transversely across the table-partitions.

8. In a match-splint machine, the combination of means for cutting the block longitudinally, a splint-receiving table having partitions therein, and a band-saw adapted to cut the block transversely, moving transversely across the table-partitions.

9. The combination of means for cutting the block longitudinally, a moving carriage for the block, a tilting splint-supporting table adapted to support the splints during transverse cutting and a band-saw moving transversely across the splint-supporting tilting table.

10. The combination of means for cutting the block longitudinally, a moving carriage for the block, a tilting splint-supporting table adapted to support the splints during transverse cutting, and means moving transversely across the tilting table for cutting the block transversely.

11. The combination of means for cutting the block longitudinally, a carriage, a partitioned splint-receiving table adapted to support the splints during transverse cutting, and means for cutting the block transversely, moving transversely across the table-partitions.

12. The combination of two saw-gangs, a carriage, a partitioned splint-table and a band-saw moving transversely across the table-partitions for cutting the block transversely.

13. The combination of means in multiple series for cutting the block longitudinally, a carriage, a partitioned splint-table, and means in multiple series for cutting the block moving transversely across the table-partitions.

14. The combination of means in multiple series for cutting the block longitudinally, a carriage, a tilting table, adapted to support the splints during transverse cutting, and means for cutting the block transversely, moving transversely across the tilting table.

15. The combination of means in multiple series for cutting the block longitudinally, a

carriage, a tilting table, adapted to support the splints during transverse cutting, and a band-saw for cutting the block transversely, moving transversely across the tilting table.

16. The combination of a series of saw-gangs, a carriage, a tilting table adapted to support the splints during transverse cutting, and means for cutting the block transversely, moving transversely across the tilting table.

17. The combination of means in multiple series for cutting the block longitudinally, a carriage, a partitioned splint-table adapted to support the splints during transverse cutting, and means for cutting the block transversely, moving transversely across the table-partitions.

18. The combination of a series of saw-gangs, a carriage, a partitioned receiving-table adapted to support the splints during transverse cutting, and means for cutting the block transversely, moving transversely across the table-partitions.

19. The combination of means in multiple series for cutting the block longitudinally, a carriage, a partitioned receiving-table adapted to support the splints during transverse cutting, and a band-saw for cutting the block transversely, moving transversely across the table-partitions.

20. The combination of means for cutting the block longitudinally, a carriage, means for individually supporting the splints transversely while being cut, and means for cutting the block transversely, moving transversely across the individual-splint-supporting mechanism.

21. The combination of a saw-gang, a carriage, means for individually supporting the splints during transverse cutting, and means for cutting the block moving transversely across the individual-splint-supporting mechanism.

22. The combination of means for cutting the block longitudinally, a carriage, a saw for cutting the block transversely and means for individually supporting the splints during the transverse cutting moving transversely across the individual-splint-supporting mechanism.

23. The combination of means in multiple series for cutting the block longitudinally, a carriage, means for cutting the block transversely, moving transversely across the splint-supporting mechanism, and means for individually supporting the splints during the transverse cutting.

24. The combination of a series of saw-gangs, a carriage, means for cutting the block transversely, moving transversely across the splint-supporting mechanism, and means for individually supporting the splints during the transverse cutting.

25. The combination of a series of saw-gangs, a carriage, a saw for cutting the block transversely, moving transversely across the

splint-supporting mechanism, and means for individually supporting the splints during the transverse cutting.

26. The combination of means in multiple series for cutting the block longitudinally, a carriage, a saw for cutting the block transversely, moving transversely across the splint-supporting mechanism, and means for individually supporting the splints during the transverse cutting.

27. The combination of means for cutting the block longitudinally, a carriage, means in multiple for cutting the block transversely, moving transversely across the splint-supporting mechanism, and means for individually supporting the splints during the transverse cutting.

28. The combination of means in multiple series for cutting the block transversely, mov-

ing transversely across the splint-supporting mechanism, means for individually supporting the splints during such cutting, and a series of saw-gangs for cutting the block longitudinally.

29. The combination of means in multiple series for cutting the block longitudinally, a carriage, a series of saws for cutting the block transversely, moving transversely across the splint-supporting mechanism, and means for individually supporting the splints during the transverse cutting.

In testimony whereof I have affixed my signature in the presence of two witnesses.

JOHN H. STEWART.

Witnesses:

JOS. H. BLACKWOOD,
FENELON B. BROCK.