

(No Model.)

3 Sheets—Sheet 1.

J. C. DONNELLY.
MATCH MAKING MACHINE.

No. 519,150.

Patented May 1, 1894.

Fig. 1.

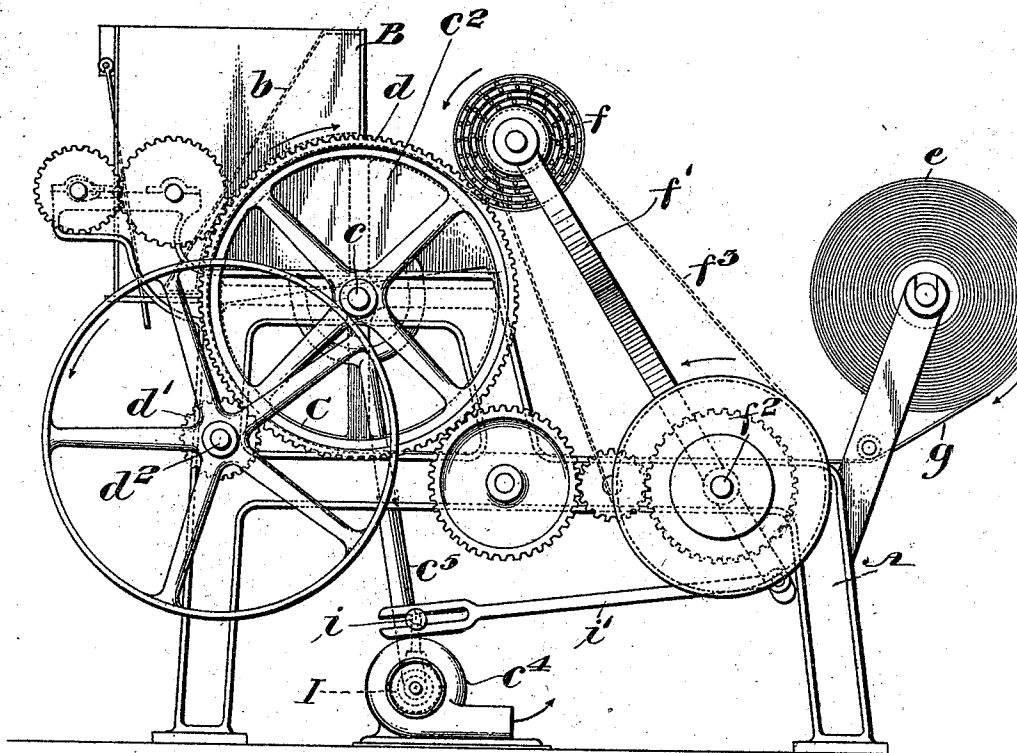
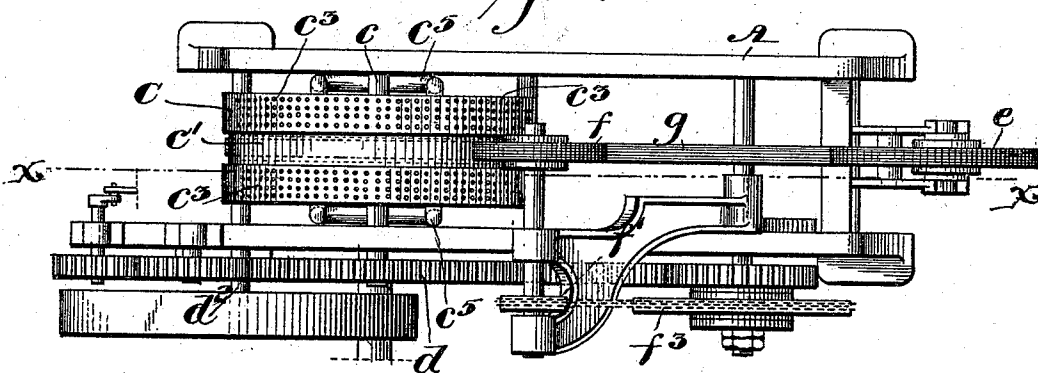


Fig. 2.



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per John T. Nolan

Attorney.

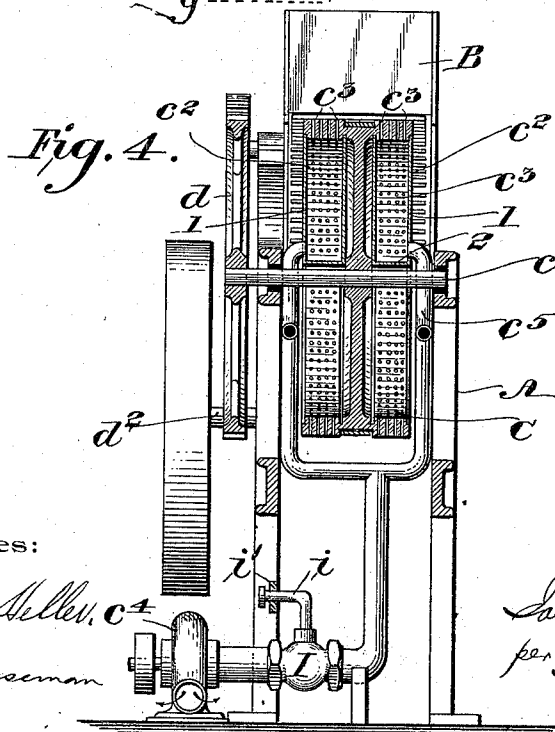
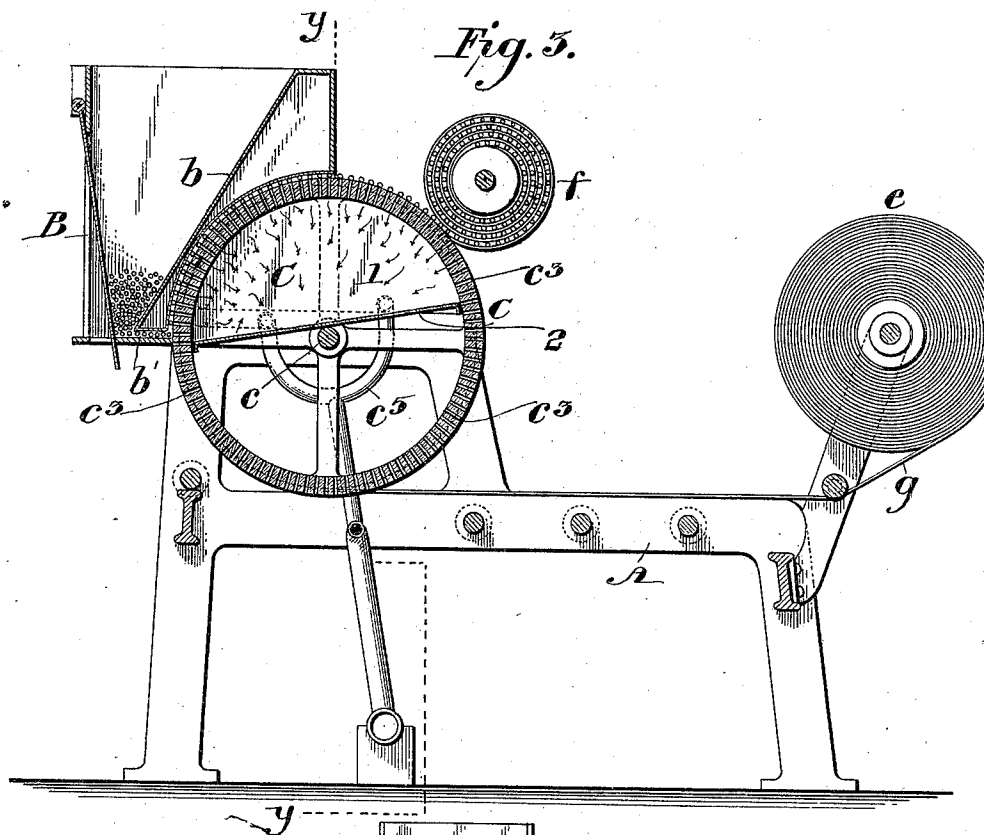
(No Model.)

3 Sheets—Sheet 2.

J. C. DONNELLY.
MATCH MAKING MACHINE.

No. 519,150.

Patented May 1, 1894.



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3 Sheets—Sheet 3.

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Fig. 5.

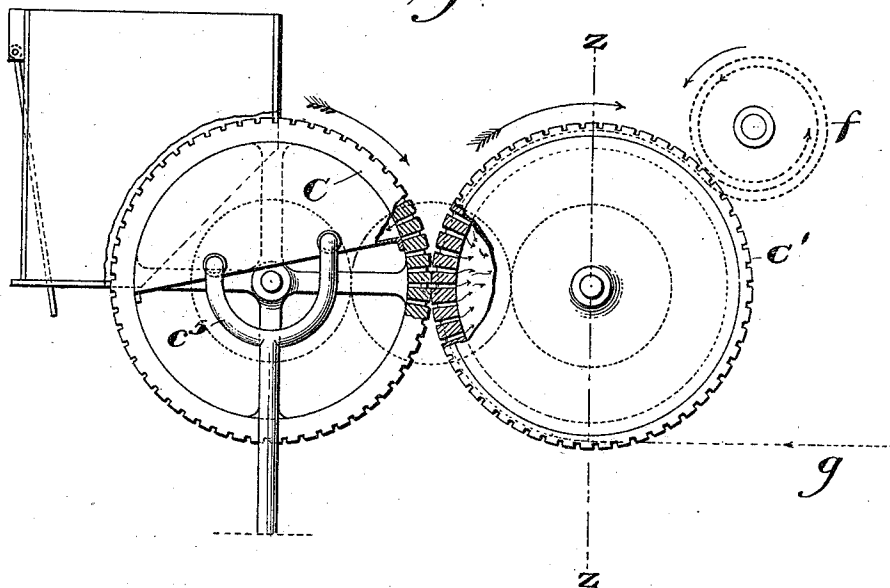
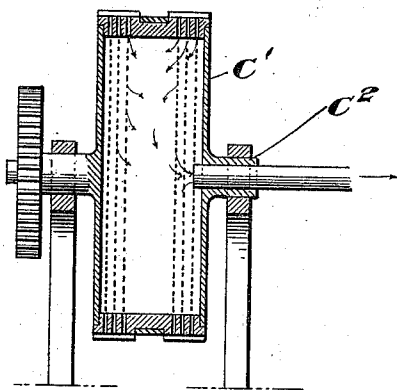


Fig. 6.



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UNITED STATES PATENT OFFICE.

JOSEPH C. DONNELLY, OF PHILADELPHIA, PENNSYLVANIA.

MATCH-MAKING MACHINE.

SPECIFICATION forming part of Letters Patent No. 519,150, dated May 1, 1894.

Application filed September 23, 1893. Serial No. 486,259. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH C. DONNELLY, a citizen of the United States, residing in the city and county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Match-Making Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

This invention relates to match making machines, and more particularly to that class in which the splints are transferred from a hopper to an appropriate device by and upon which they are bunched or assembled preparatory to the dipping operation.

The invention, as generally stated, consists in the employment of a perforated receiver to which the splints are fed and upon which they are maintained, at intervals apart, by the exhaustion of the air from an adjacent space or chamber with which the perforations communicate, in combination with various relatively arranged co-operating parts that enter into the organization of the machine, all as will be hereinafter fully set forth and be definitely claimed.

A machine embodying my invention is illustrated in the annexed drawings, in which—

Figure 1 is a side elevation. Fig. 2 is a plan with the hopper removed. Fig. 3 is a full longitudinal vertical section, as on the line $x-x$ of Fig. 2. Fig. 4 is a transverse vertical section as on the line $y-y$ of Fig. 3. Fig. 5 is a sectional elevation of a modified construction. Fig. 6 is a partial section as on the line $z-z$ of Fig. 5.

A represents the frame-work of the machine upon which the usual hopper B and other parts are supported. Journaled in bearings in the sides of the frame, is a shaft c upon which is fixed a hollow drum C that extends partially within the hopper, which shaft with the drum thereon is rotated in any approved manner. In the present instance the shaft is equipped with a spur wheel d with which gears a pinion d' on a driving shaft d^2 to which motion is imparted from a suitable source of power. The drum C is provided with a median circumferential groove c' around which passes from the roll e to the bunching spool f , the usual tape or webbing

g that is employed for bunching the splints in coils. The periphery of the drum, on each side of the groove c' , is perforated at intervals in transverse lines, as at c^2 , whereby if splints be fed to or deposited upon the drum, and air be exhausted from the latter, the suction thereby induced through the perforations will maintain the splints upon the drum. Hence, as the drum rotates within the hopper, if the air be exhausted from the former, the splints contained in the hopper will be drawn individually upon the successive lines of perforations on the drum, and be accordingly taken up thereby and conducted to the bunching coils.

In the construction illustrated in Figs. 1 to 4, both inclusive, a pair of stationary exhaust chambers c^2 is arranged in the drum, with which chambers the perforations in the drum communicate during the traverse of the respective rows of perforations from the hopper to the bunching coil. These chambers are connected with a suitably-disposed fan c^4 , or other air-exhausting device, by means of lateral pipes c^5 whereby the air may be exhausted from the chambers during the rotation of the drum, with the effect above mentioned. Each of the chambers is formed of a pair of semi-circular plates 1, with a bottom piece 2, the edges of the plates being concentric with the internal periphery of the drum to which they are fitted.

In order that the match splints contained in the hopper shall be fed or presented individually to the drum, I dispose in the forward portion of the hopper a suitable frame b between which and the bottom of the hopper is formed a space b' by way of which the splints pass singly to the drum. It will be obvious that during the rotation of the drum, the individual match splints will be successively drawn, by suction, upon the rows of perforations, as the latter pass the delivery space b' of the hopper, thereby insuring the disposition of the splints upon the drum at stated intervals.

The bunching spool f is supported as heretofore upon a rocking arm f' which is mounted on a shaft f^2 journaled in the sides of the frame-work; said spool being rotated in concert with the feed drum or carrier by means of sprocket gearing f^3 to which motion is im-

parted from the spur wheel d through the medium of a suitable gear train. This construction being well known in the art no description in detail is necessary.

5 As a simple and efficient means whereby the operation of exhausting the air from the chambers shall be automatically checked, when a predetermined number of splints has been bunched, so as thereupon to arrest the
10 operation of the drum upon the splints in the hopper, I provide the main exhaust pipe with a check valve I , the handle i of which is embraced by the bifurcated end of a link i' that is pivotally connected at its other end with
15 a depending portion of the rocking arm f' . Thus, when the coil has reached a certain limit and the rocking arm has accordingly swung outward, the bifurcated end of the link, moving forward, presses against the handle
20 and perforce closes the valve.

Although in the foregoing described construction the use of peripheral grooves in the drum to receive the match-splints, is obviated, yet such grooves may be employed in
25 connection with the exhaust feature, if desired, as represented in Fig. 5. In this figure I have also represented a supplementary transmitting drum C' interposed between the main drum and the coiler, which supplementary drum is peripherally grooved and perforated similarly to and for a like purpose as
30 the main drum. I have shown the drum C' as headed and provided with a hollow journal C^2 through which the air is exhausted from the interior of the drum. See Fig. 6. In this construction, the splints are conducted
35 by the main drum from the hopper to the supplementary drum, thence to the bunching spool; the latter drum being rotated uniformly in the same direction as the drum C by means of suitable gearing, as indicated by dotted lines in Fig. 5.

If desired, the drum C may be constructed similarly to the drum C' , and the air exhausted therefrom in like manner.
45

From the foregoing description it will be obvious that by my invention the following ends are attained, to wit,—first, the withdrawal of the splints individually from the hopper, or
50 splint feeding device, and their delivery, at regular intervals, to the carrier or feed drum, and, secondly, the maintenance of the splints, at intervals apart, upon said drum or carrier. Moreover, where two co-acting drums
55 or carriers are employed, the invention obviates the necessity of using intermediate stripper fingers to transfer the splints from one carrier to the other; it obviates the necessity of using guard plates to prevent the
60 splints from flying off or falling from the carrier or carriers, and it obviates the necessity of using mechanical devices to prevent longitudinal or endwise displacement of the splints on the carrier or carriers.

65 I claim as my invention—

1. In a match making machine, the combination with a hopper or splint-feeding device,

of a perforated splint receiver adjacent thereto, a chamber communicating with the perforations in said receiver, and means for exhausting the air from said chamber, the perforations in the receiver being so disposed that the splints in the hopper or feeding device will be drawn upon the perforations when the latter are in the path of the splints and will be thereby maintained upon the receiver at intervals apart, substantially as described. 70 75

2. In a match making machine, the combination with a hopper, or splint-feeding device, of a perforated splint carrier communicating therewith, a chamber communicating with the perforations in said carrier, and means for exhausting the air from said chamber, the perforations in the carrier being disposed in parallel rows that the individual splints in the hopper or feeding device shall be drawn to and upon the succeeding rows during the traverse of the latter, substantially as described. 80 85 90

3. In a match making machine, the combination with a hopper, of a peripherally perforated rotatable roller or drum, a stationary air chamber within said drum, a pipe or pipes leading from said chamber, and an exhaust communicating with said pipe or pipes, the perforations in the said roller or drum being disposed in parallel series whereby the individual splints will be drawn successively upon said perforations and thus be maintained at intervals apart upon the roller or drum, substantially as described. 95 100

4. In a match making machine, the combination of a carrier provided with perforations arranged in parallel rows, a chamber below the perforated surface, means for exhausting the air from said chamber, and a bunching spool co-acting with said carrier, whereby the splints fed to the carrier will be maintained thereon at intervals apart, and be conducted thereby to the bunching spool, substantially as described. 105 110

5. In a match making machine, the combination of a hopper, a drum communicating therewith, said drum being provided with a circumferential groove and with parallel series of peripheral perforations, a chamber below the perforated surface, means for exhausting the air from said chamber, a bunching tape or web passing around the circumferential groove, and a bunching spool with which said tape or web is connected, substantially as described. 115 120

6. In a match making machine, the combination of a splint containing hopper provided with an outlet for the withdrawal of the splints in single file, a carrier provided with perforations arranged in parallel series which are adapted successively to communicate with said outlet, a chamber communicating with the perforated surface, and means for exhausting the air from said chamber, substantially as described. 125 130

7. In a match making machine, the combi-

nation of a splint containing hopper provided with an outlet for the withdrawal of the splints in single file, a carrier provided with perforations arranged in parallel series which are adapted successively to communicate with said outlet, a chamber communicating with the perforated surface, means for exhausting the air from said chamber, and a splint bunching spool and tape co-acting with said carrier, substantially as described.

8. In a match making machine, the combination of a splint-containing hopper provided with a frame therein, between which and the bottom of the hopper is formed a space for the outward passage of the splints, a carrier provided with perforations which are adapted successively to communicate with said outlet, a chamber communicating with the perforated surface, and means for exhausting the air from said chamber, substantially as described.

9. In a match making machine, the splint carrying drum provided with a median circumferential groove, and with transverse rows of peripheral perforations on each side of said groove, substantially as described.

10. In a match making machine, the splint carrying drum provided with transverse rows of peripheral perforations, in combination with a pair of stationary exhaust chambers arranged side by side within said drum in communication with the perforations, an exhaust engine, and connections between the same and said chambers, substantially as described.

11. In a match splint bunching machine, the combination of a perforated splint carrier, a chamber below the perforated surface, means for exhausting the air from said chamber, a splint bunching or assembling device,

its supporting and operating parts, and means for automatically checking the air exhaust when the bunching or assembling operation has reached a predetermined stage; substantially as described.

12. The combination of a perforated carrier, a chamber below the perforated surface, an air exhaust device, a pipe connecting the same with the said chamber, a valve on said pipe, a bunching spool, the rocking arm, supporting said spool, means for rotating said spool, and a connection between said rocking arm and the valve, whereby the latter is closed at a predetermined period; substantially as described.

13. In a match-making machine, the combination of a splint-containing hopper provided with a lateral passage for the withdrawal of the splints singly, of a splint carrier, laterally adjacent to said passage, and means for transferring the splints laterally from said passage to the carrier, substantially as described.

14. In a match-making machine, the combination of a splint-containing hopper provided with a lateral passage for the withdrawal of the splints singly, of a splint carrier, laterally adjacent to said passage, provided with perforations which are adapted successively to communicate with the mouth of said passage, a chamber communicating with the perforations, and means for exhausting the air from said chamber, substantially as described.

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

JOSEPH C. DONNELLY.

Witnesses:

JOHN R. NOLAN,

H. L. CHEESEMAN.