

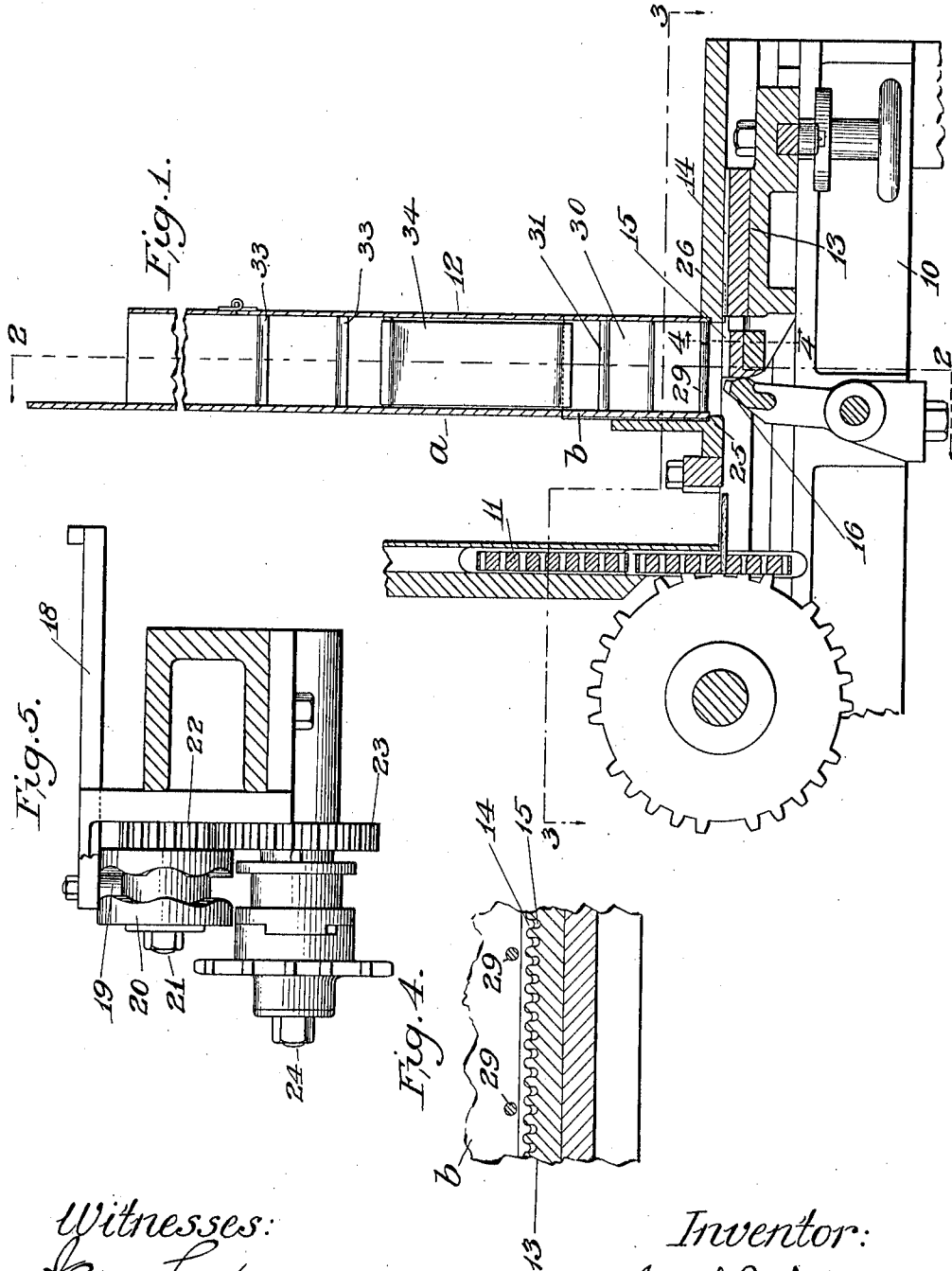
J. P. WRIGHT.
MATCH MACHINE.

APPLICATION FILED APR. 9, 1909. RENEWED JUNE 7, 1912.

1,048,629.

Patented Dec. 31, 1912.

3 SHEETS-SHEET 1.



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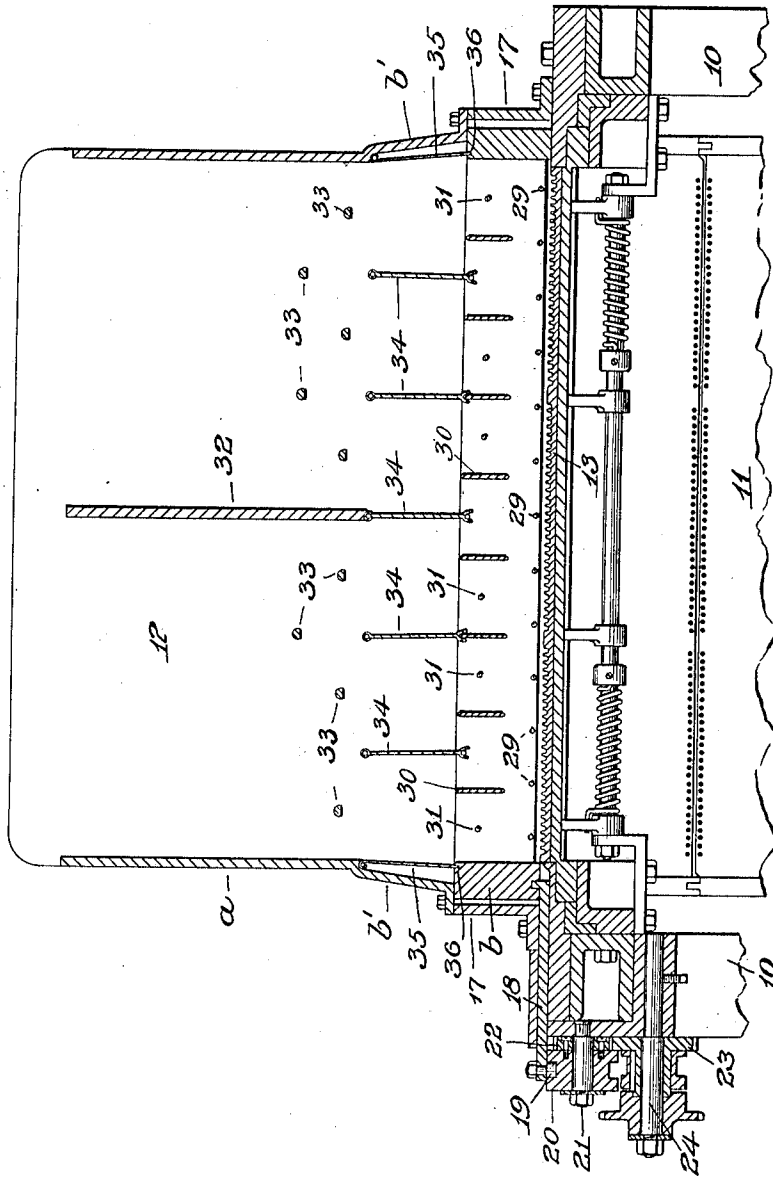
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3 SHEETS—SHEET 2.

Fig. 2.



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3 SHEETS-SHEET 3.

Fig. 7.

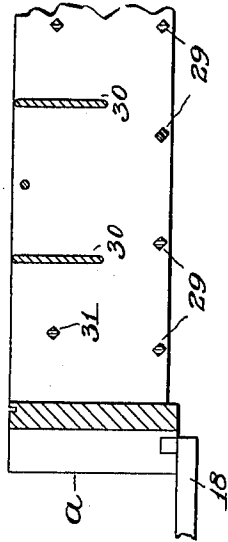


Fig. 6.

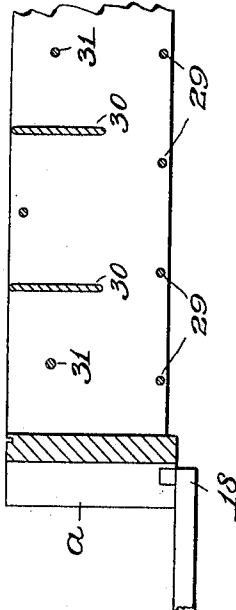
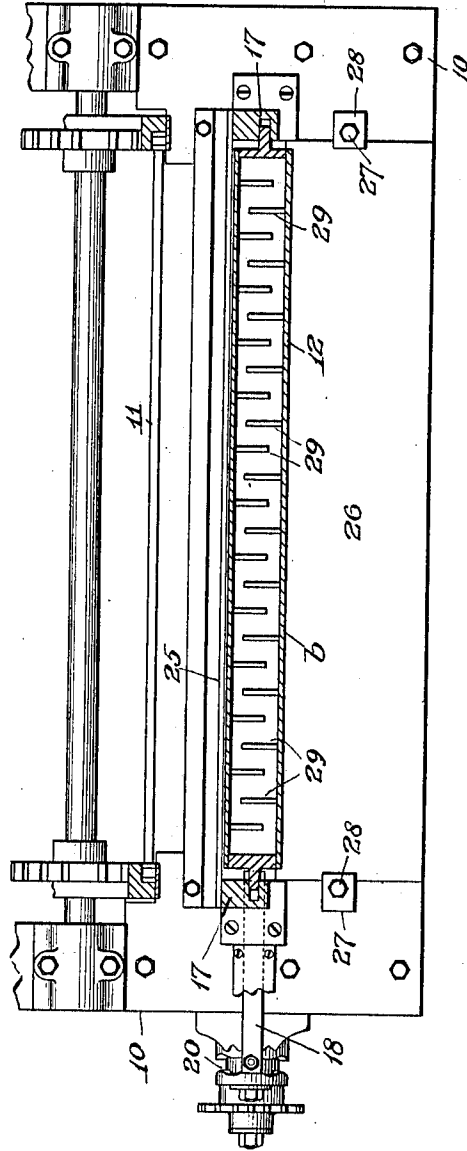


Fig. 3.



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UNITED STATES PATENT OFFICE.

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MATCH-MACHINE.

1,048,629.

Specification of Letters Patent.

Patented Dec. 31, 1912.

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To all whom it may concern:

Be it known that I, JACOB P. WRIGHT, a citizen of the United States, and resident of Barberton, in the county of Summit and State of Ohio, have invented certain new and useful Improvements in Match-Machines, of which the following is a specification.

This invention relates more particularly to that class of match making machines in which splints are progressively delivered from a hopper to a setting or inserting device and thereby introduced row by row to a carrier by means of which they are transported through the match making path. The invention especially concerns the hopper structure and its associated parts; and has for its object to provide for the accurate feeding and delivery of the splints to, and their efficient seating in the setting or inserting device preparatory to their transference to the carrier, as will be hereinafter pointed out.

In an application for Letters Patent of the United States, filed by me June 27, 1906, Serial No. 323,565, I have illustrated a match machine wherein the setting or inserting device comprises, *inter alia*, a head mounted to slide beneath the hopper and toward and from the carrier, the upper surface of said head being provided with a series of parallel grooves or spaces whereof the forward are deeper than the rearward portions and are so arranged with relation thereto and to the hopper, that such forward portions are given a double opportunity to be filled with splints, and abutments are afforded whereby the splints thus seated are positively forced forward and into the carrier when the setting head is advanced to the latter.

In illustrating the present invention I have represented it as applied to a match machine having a grooved setting head of the character above indicated, but it is to be understood that my invention can be advantageously used with any other appropriate form of splint transferring or setting device.

In the drawings—Figure 1 is a longitudinal vertical section of a part of a match machine embodying my invention. Fig. 2 is a transverse vertical section, as on the line 2—2 of Fig. 1. Fig. 3 is a horizontal section, as on the line 3—3 of Fig. 1. Fig. 4 is

a sectional detail through the setting head and the adjacent part of the hopper, as on the line 4—4 of Fig. 1. Fig. 5 is a sectional detail of the mechanism for vibrating the lower portion of the hopper. Fig. 6 is a longitudinal section of one end of the lower portion of the hopper. Fig. 7 is a similar view showing a modification of the form, in cross-section, of the agitating pins and baffle rods.

The numeral 10 represents a part of the framework of a match machine; 11 a part of the perforated match carrier; 12 a splint-supply hopper, and 13 a grooved setting head, which, reciprocating beneath the hopper and toward and from the carrier, receives the splints row by row from the hopper and inserts them into the opposing perforations of the carrier.

14 represents the shallow portions of the grooves which initially receive the splints from the hopper, and 15 the deeper portions which subsequently receive the splints and insert them into the perforations of the carrier.

16 represents an oscillating frame structure adapted to support the forward ends of the splints at the exit end of the hopper, the upper portion of such structure by virtue of its rotary path supporting the splints only when their forward ends are being ejected and while the leading end of the head 15 is under the exit end of the hopper.

All the parts just mentioned, excepting the hopper, are substantially similar in construction and operation to the corresponding parts of the machine set out in my pending application aforesaid, and, therefore, they need not be herein more particularly described.

The hopper comprises, as usual, a stationary body section *a* and a lower movable section *b*, the latter being slidingly fitted to suitable end guides 17 on the main frame and being reciprocable directly above and transversely of the grooved upper surface of the setting head. One end of the lower section is pivotally connected to a bar 18 which is provided with a stud or roller 19 in engagement with a peripheral cam 20 on a stud shaft 21, the latter bearing a gear wheel 22 in mesh with a gear 23 on a lower driven shaft 24. Thus a rapid vibratory motion is transmitted to the lower section of the hopper in a manner to jar and agitate the con-

tained splints and assist in their descent toward and upon the setting head. Any other appropriate means for agitating the movable hopper section may be employed.

5 At the exit end of the hopper is a plate 25, the purpose of which is to prevent the passage from the hopper of all splints excepting those which are properly seated in the grooves of the setting head; and at the rear
10 of the hopper is a plate 26 the purpose of which is to prevent the splints from being drawn out at the rear of the hopper during the backward stroke of the setting head. The plate 26 is disposed immediately above
15 the path of the rearward portion of the setting head, and is conveniently secured to the main frame by blocks 27 and set screws 28. Thus the plate 26 can be readily removed to permit access to the bottom of the
20 hopper for the removal of slugs or large pieces that cannot pass out otherwise.

An important feature of my invention consists in the provision of a series of horizontal pins 29 disposed transversely of the
25 movable hopper section and adjacent the grooved surface of the setting head, whereby the splints lying upon and near such surface are positively agitated and caused to enter the unfilled grooves of the head; the
30 objective point being to insure the proper seating of splints in all the grooves of the series, in order that such splints shall be advanced in perfect order from the main body of splints within the hopper and inserted
35 uniformly in the carrier 11 by the setting head.

The pins are of small cross-sectional area in order that they shall pass easily and smoothly under the superposed mass of
40 splints contained in the hopper, and they (the pins) are arranged sufficiently near to each other to insure the agitation of the intervening splints. By reason of their proximity, the pins, if extended entirely
45 across the hopper from side to side thereof, would permit a splint or splints lying lengthwise of the hopper to rest upon two adjacent pins and thus obstruct the downward passage of the splints above. To obviate this I mount the pins as illustrated
50 most clearly in Fig. 3, wherein it will be observed that each pin extends partially across the hopper and that the pins are alternately affixed to the opposite walls; or, in other
55 words, there are two series of pins projecting in alternate order from the two walls of the hopper in a manner to provide between the basal ends of adjacent pins, spaces of greater length than the length of a match.
60 The jarring action of the vibratory hopper causes splints that are not in perfect order to work over to the sides of the hopper, and hence the spaces afforded between the pins as above mentioned, permit such dis-
65 ranged splints to pass freely downward.

The greater portion of the splints that come down lengthwise of the hopper are those that drop irregularly therinto while the hopper is being filled, and consequently they fall down at the sides of the body of
70 splints. Any splints that are awry in the body of the pile are, during their descent within the hopper, straightened by a novel arrangement of partitioning and baffling devices constituting another feature of my in-
75 vention, as follows:

In the movable hopper section is a series of transverse partitions 30 the passages or spaces between which are of greater width than the length of a match splint. These
80 spaces, with certain exceptions hereinafter mentioned, are interrupted by small baffle rods 31 extending from side to side of the hopper, whereby any descending splints that may lie lengthwise or diagonally of the
85 hopper will, upon entering such space or spaces, engage the opposing rod or rods 31 and be deflected thereby into position transversely of the hopper, or substantially so. It is to be noted that the rods 31 and pins 29
90 may be round or polygonal in cross-section. In the drawings they are illustrated as round, except in Fig. 7 in which they are shown as square in cross-section.

The stationary portion of the hopper is
95 provided with a central partition 32 to divide the mass of splints, and the two compartments thus formed are provided in their lower portion with a series of transverse baffle rods 33 arranged preferably in stag-
100 gered relation as indicated, and so disposed as to deflect displaced splints contacting therewith and tend to shift them into proper position. In order to agitate the mass of
105 splints in the lower portion of the stationary section, and supplement the baffling devices in deflecting and positioning disarranged splints, I provide said portion with a series of yielding partitioning plates 34 which are pivotally connected thereto and to the mov-
110 able hopper section, whereby such plates partake of the vibrations of the latter section. In the present instance, the plates 34 are pivoted at intervals to the stationary body of the hopper and their lower ends
115 are bifurcated and engaged alternately at intervals with certain partitions 30 of the movable section and with transverse rods in spaces between other partitions. In such
120 spaces the baffle rods 31 are not needed, as the plates 34 serve to prevent displacement of the contiguous splints.

As a simple and efficient means to avoid the presence of open joints or ledges at the
125 junctions of the ends of the two hopper sections during the vibration of the lower section, and also to assist in the jarring and agitating of the splints within the station-
ary section, I slightly offset the ends of the
130 upper section, as at b' , and pivot thereto and

to the proximate ends of the movable section yielding plates 35, substantially similar in construction to the partitioning plates 34 previously mentioned. The lower ends of the plates 35 are conveniently seated in narrow grooves or channels 36 in the upper edges of the end walls of the movable section.

The mechanism hereinbefore described provides a simple and efficient means for the purpose intended, and such mechanism can be modified in many respects without departing from the characteristic features of my invention.

I claim—

1. In a match machine, the combination with a bed or plate having in its upper surface longitudinally-extending splint-receiving spaces, of a vibratory hopper arranged transversely of said spaces and provided with a series of splint-seating pins of slightly less length than the width of the hopper, said pins lying adjacent to and longitudinally of the splint-receiving spaces of the said bed or plate.

2. In a match machine, the combination with a bed or plate having in its upper surface longitudinally-extending splint-receiving spaces, of a vibratory hopper arranged transversely of said spaces and provided with two series of splint-seating pins extending alternately from the opposite walls of the hopper, said pins being of less length than the width of the hopper, and lying adjacent to and longitudinally of the splint-receiving spaces of the said bed or plate.

3. In a match machine, the combination with a bed or plate having in its upper surface longitudinally-extending splint-receiving spaces, of two series of laterally-alternating splint-seating pins supported in a plane adjacent to and parallel with the spaced upper surface of said bed or plate, the basal ends of the pins of one series being located outwardly beyond the free ends of the pins of the other series whereby is afforded an open unobstructed path between the basal ends of succeeding pins of each series, and vibratory supporting means for the respective pins.

4. In a match machine, the combination with a splint-setting head having in its upper surface shallow and deep grooves or spaces for the reception of splints, of a hopper having therein adjacent the upper surface of the setting head, and parallel therewith, pins projecting alternately inward from the opposite sides of the hopper,

said pins being of less length than the width of the hopper, and the spaces between adjacent pins being of less length than the length of regular splints, and means for agitating the said pins transversely of said setting head.

5. In a match machine, the combination with a splint-setting head having in its upper surface shallow and deep grooves or spaces for the reception of splints, of a hopper comprising an upper stationary section and a lower vibratory section, said latter section having therein adjacent the upper surface of the setting device, and parallel therewith, pins projecting alternately inward from opposite sides of the lower section, said pins being of less length than the width of the hopper, and the spaces between adjacent pins being of less width than the length of regular splints.

6. In a match machine, the combination with a splint inserting device, of a vibratory hopper portion provided with transverse partitions and baffle rods, and provided below said partitions and rods and adjacent said inserting device, with a series of pins of less length than the width of the hopper portion.

7. In a match machine, the combination with a splint-inserting device, of a hopper comprising an upper stationary section and a lower vibratory section, the upper section being provided with baffle rods extending transversely thereof, and also with a series of vertically-disposed partition plates mounted and arranged to partake of the motion of the vibratory section, and the said vibratory section being provided adjacent said inserting device with a series of splint-seating pins of less length than the width of said vibratory section.

8. In a match machine, the combination with a splint-inserting device, and a hopper comprising an upper stationary section and a lower vibratory section, of joint-closing and splint-jarring means at the junctions of the ends of the two sections, said means comprising yielding plates pivotally connected to the adjoining ends of said sections respectively.

Signed at Barberton in the county of Summit and State of Ohio this 2nd day of April A. D. 1909.

JACOB P. WRIGHT.

Witnesses:

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