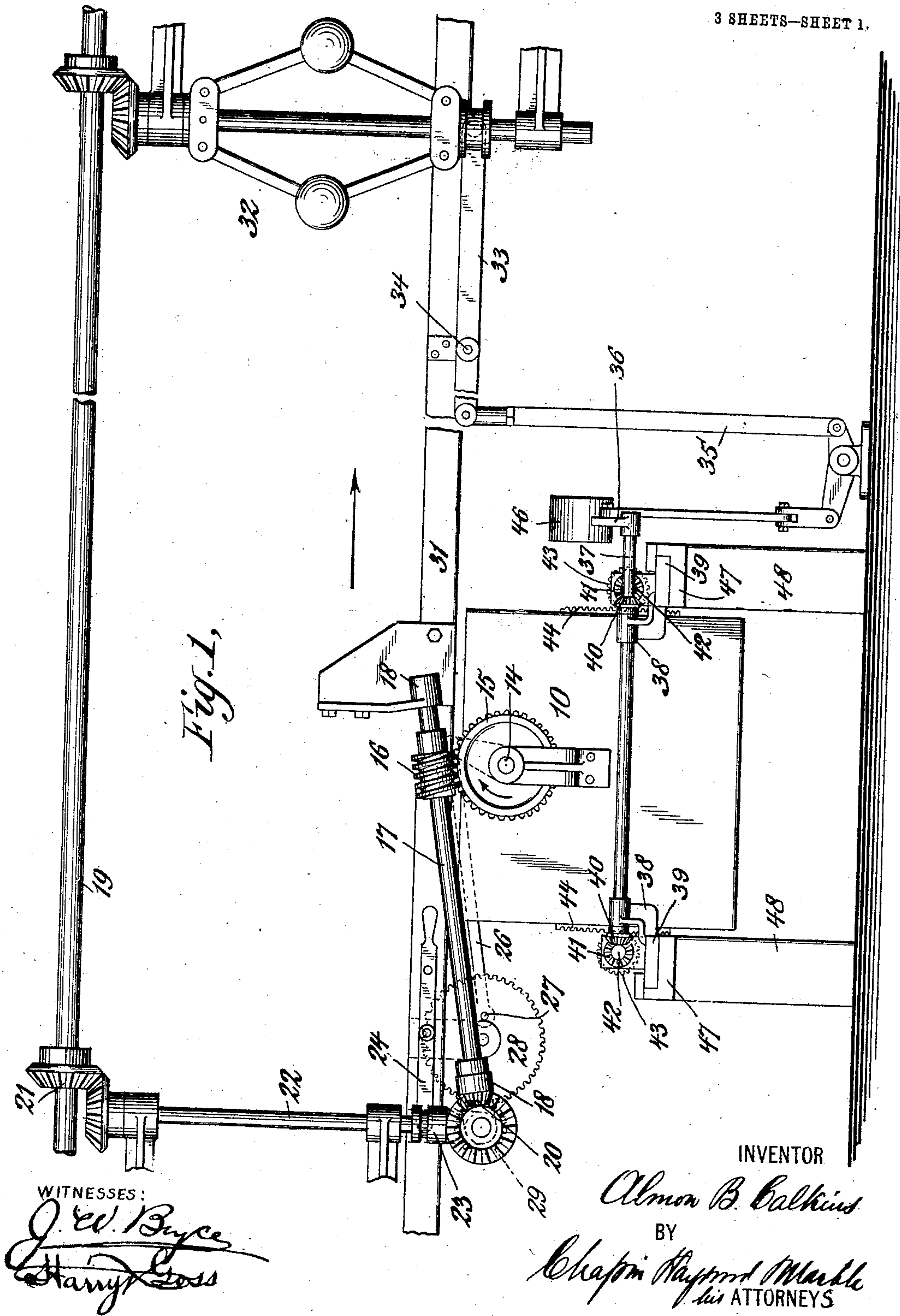


No. 840,821.

PATENTED JAN. 8, 1907.

A. B. CALKINS.
MATCH MAKING MACHINERY.
APPLICATION FILED APR. 19, 1906.

3 SHEETS—SHEET 1.



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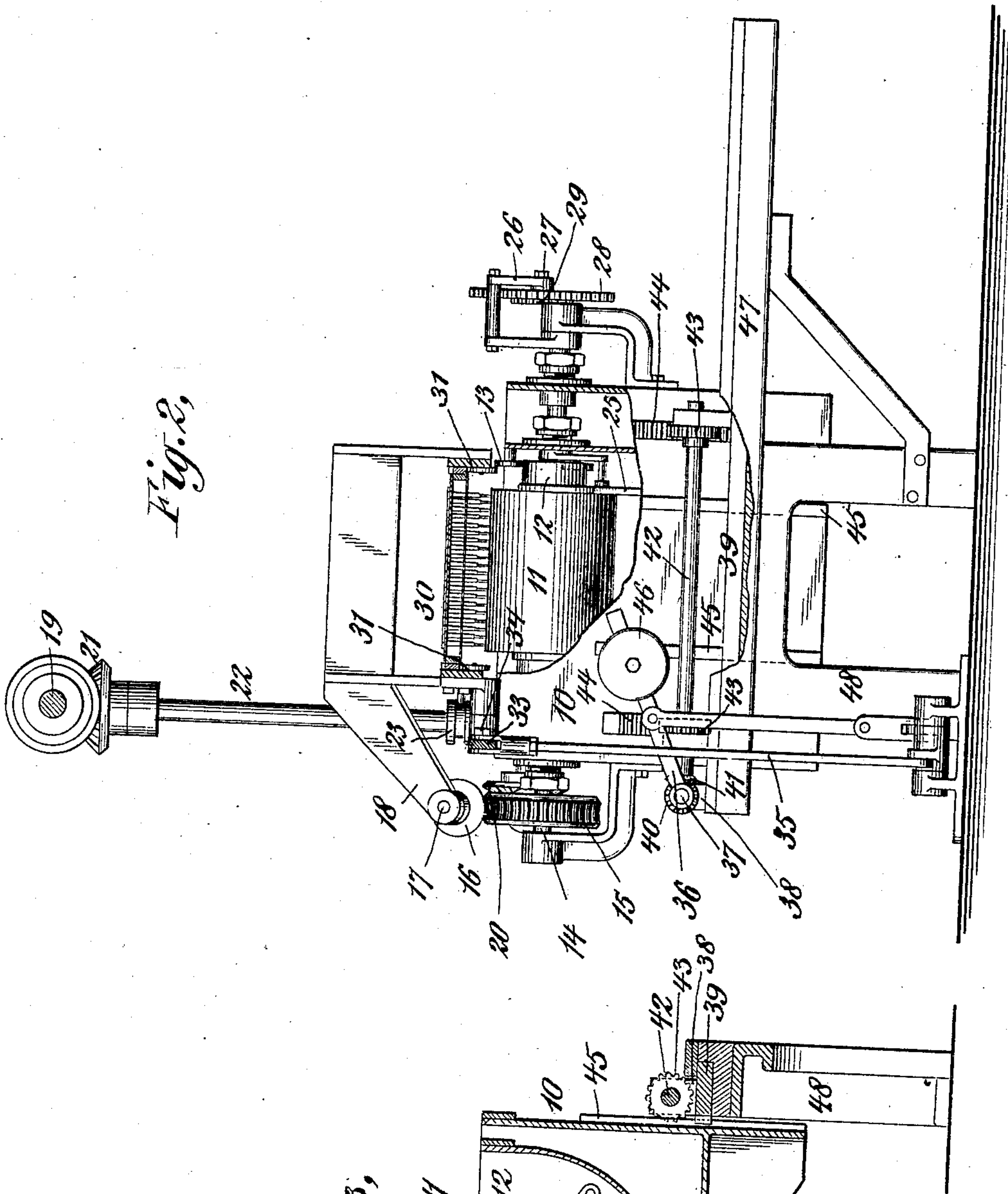
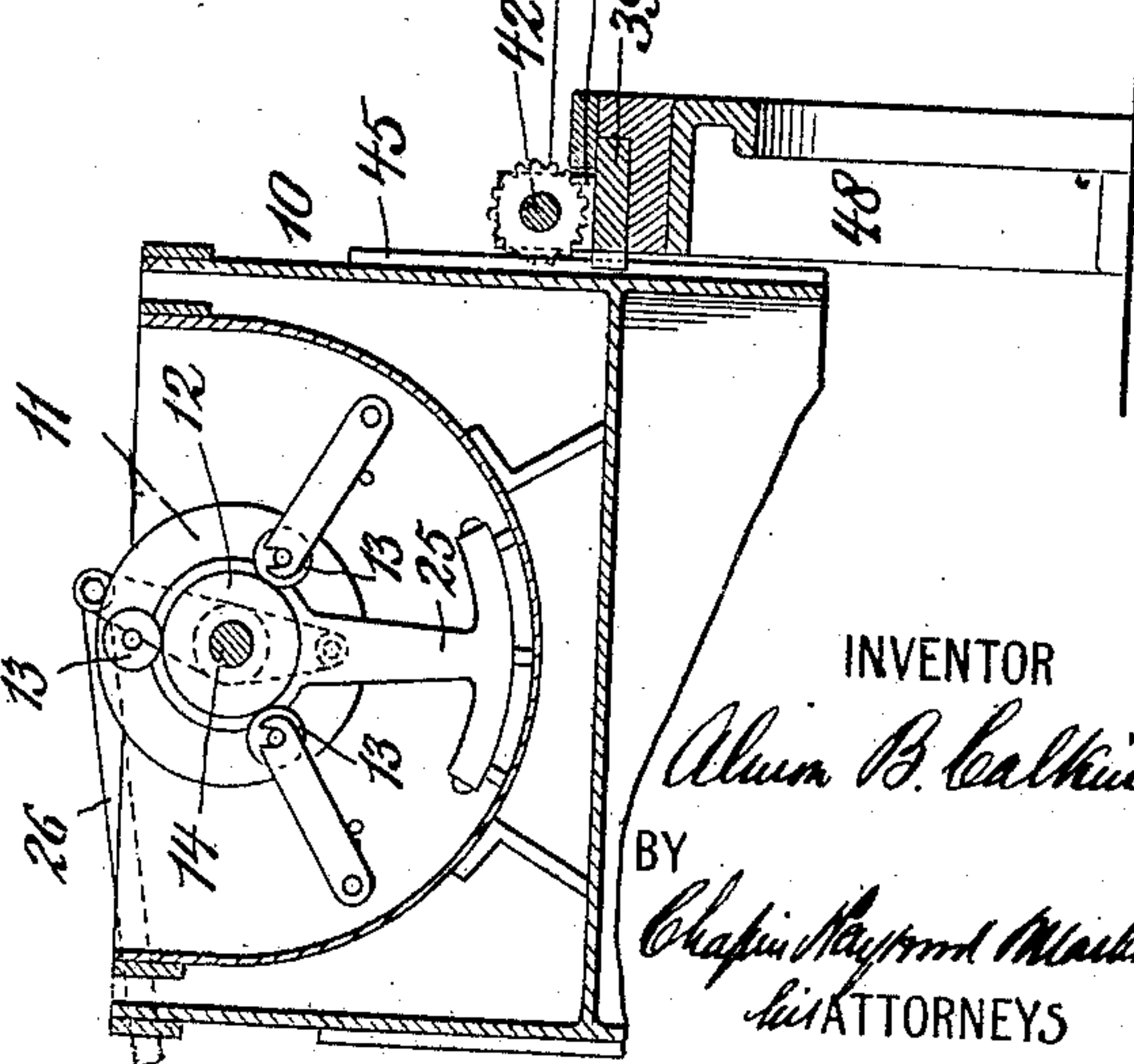


Fig. 3,



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MATCH-MAKING MACHINERY.

No. 840,821.

Specification of Letters Patent.

Patented Jan. 8, 1907.

Application filed April 19, 1906. Serial No. 312,587.

To all whom it may concern:

Be it known that I, ALMON B. CALKINS, a citizen of the United States of America, and a resident of Belleville, county of Essex, State of New Jersey, have invented certain new and useful Improvements in Match-Making Machinery, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.
10 My invention relates to improvements in match-making machinery, and particularly to improvements in means for applying match composition to splints.

My invention consists in means for producing such relative movement between the composition-applying apparatus and the splints as to disconnect the same from operative engagement whenever the machinery for advancing the splints shall stop or whenever the speed at which such machinery is run shall fall below a predetermined point. To produce the proper relative movement, I either move the composition-applying apparatus away from the splints or I lift the
15 splint-carriers and splints therein away from the composition-applying apparatus. The particular means for producing this movement is preferably a centrifugal governor operated by the machinery for advancing the splint-carriers and splints therein, said centrifugal governor arranged to move the foregoing elements toward and away from each other in accordance with the speed at which it is rotated. By this means as the driving
20 machinery stops or slows down toward the stopping-point the elements are moved away from each other as it is desired.

In order that my invention may be thoroughly understood, I will now proceed to describe the same with reference to the accompanying drawings, illustrating certain embodiments thereof, and will then point out the novel features in claims.

In the drawings, Figure 1 is a view in side elevation of an apparatus embodying my invention. Fig. 2 is an end view of the same with certain parts broken away in transverse section. Fig. 3 is a partial view, in longitudinal section, through a composition-tank and certain correlated parts. Fig. 4 is a view
45 in side elevation of a modified structure. Figs. 5 and 6 are detail views of the form of splint-carrier employed in the apparatus

shown in Fig. 4. Fig. 7 is a detail transverse sectional view upon the line 7-7 of Fig. 4. 55

A tank 10 is illustrated for containing the composition to be applied to splints, the said tank being suitably jacketed, as is usual, whereby it may be heated or cooled, as the case may be, all as is well known in the art to which this invention appertains. 60

A composition-applying roller 11 is mounted in the tank, said roller having trunnions 12, supported by and arranged to rotate upon antifriction-rollers 13. Secured to the roller 11 is a shaft 14, which projects through one wall of the tank to the exterior thereof, and fast to this shaft is a worm-wheel 15, arranged in mesh with a worm 16, by which it is driven. The worm 16 is mounted on a
65 shaft 17, journaled in bearings 18, said shaft driven from the overhead driving-shaft 19 by means of bevel-gearing 20, miter-gearing 21, and an intermediate vertical shaft 22. A clutch 23 is provided for connecting and disconnecting the drive, as may be desired, such clutch being operated by means of a hand-lever 24. Other driving means may be employed for the roller 11, if desired. 75

The usual or any desired form of stirrer 25 may be employed, the said stirrer rocked by means of a pitman connection 26 with a crank-pin 27 upon a spur-gear 28, the said spur-gear engaged by a pinion 29 in driving relation with the bevel-gearing 20. 85

From the foregoing it will be seen that upon rotation of the drive-shaft 19 the composition-applying roller 11 will be slowly rotated and the stirrer 25 somewhat rapidly reciprocated. Splints are conveyed over the composition-applying roller, as is usual in this type of machine, the splints being supported in a suitable carrier 30. (See particularly Fig. 2.) This carrier, which may conveniently be in the form of a plurality of carrier-frames having individual splint-holding devices, is arranged to run upon ways 31, the said carriers being advanced in the direction of the arrow, Fig. 1, by suitable feeding mechanism, of which the driving-shaft 19 constitutes a part. This feeding mechanism is not shown here in detail as forming *per se*, no part of the invention herein and being well known and understood in this art. The rate of movement of the carriers is correctly
90 100 105
timed to the surface speed of rotation of the

roller 11, the splints projecting downwardly from the carrier and arranged so that their ends will touch or almost touch the periphery of the roller 11 as they pass over the same.

5 This roller in its rotation picks up a modicum of composition, and the composition is thus applied to the splint ends.

In driving relation with the shaft 19 is a centrifugal governor 32, said governor arranged to operate a lever 33, fulcrumed at 10 34 and connected at its outer end through intermediate links, levers, &c., 35 with a rocker arm 36, which is mounted upon a shaft 37. The shaft 37 is suitably journaled in stationary bearings 38 upon transverse slides 39, and the said shaft is provided with miter-gears 40 40 in mesh with similar miter-gears 41 41 upon shafts 42 42 at right angles thereto. The shafts 42 42 are each provided with 20 pinions 43 in mesh with racks 44 upon the sides of the tank 10. The tank 10 is supported by means of this pinion-and-rack connection, being guided by vertical slides and guideways 45. Thus as the shaft 37 is rotated the shafts 42 at right angles thereto 25 will be also rotated and the tank 10 lifted or depressed in accordance with the direction of movement of the said shaft. The weight of the tank is counterbalanced to a certain extent by means of a counterbalance-weight 46 30 upon the operating-arm 36.

The relation of the governor to the moving parts is such then that when the shaft 19 is running at normal speed and the balls of the 35 governor thereby fly outward the tank will be lifted to a predetermined extent, so as to properly hold same in a position to engage the splint ends as the carriers convey them over the roller. On the other hand, as the 40 shaft 19 stops or slows down toward stopping the balls of the governor 32 will move inward, whereby the tank will be lowered to a position where it will be out of the path of movement of the splints, and thus will fail to 45 engage same. Thus whenever the shaft 19 stops the composition apparatus and splints will be moved out of relation to each other.

The slides 39 above referred to are mounted to slide transversely in ways 47, formed as 50 a part of the framework 47 of the machine. The tank as a whole may be moved laterally upon the ways 47 when desired, as will be well understood.

In Figs. 4, 5, 6, and 7 I have shown a modified form of apparatus particularly adapted 55 where a carrier-chain rather than splint-frames is employed. In this example of my invention the splint-carriers, and hence the splints carried thereby, are lifted away from 60 the roller 11 by means of the governor instead of the roller being lowered away from the splints. For this purpose I have shown a portion 49 of the tracks or ways 31 as capable of being lifted, the said portions 49 being 65 suitably pivoted at 50, as will be seen by ref-

erence to Fig. 4. The governor is then connected with the portion 49 by means of a link or other connection 51, as will be seen, the operation being substantially similar to that described for the other figures. In connection 70 with this form of apparatus I have shown a carrier-chain 52; but it will be understood that other forms of carriers may be employed with this example of my invention, as also may other forms of carriers be employed 75 with the form of my invention shown in the other figures.

What I claim is—

1. In match-making machinery, the combination with means for applying a composition to splints, and driving means, of means 80 automatically operated by the stopping of the driving means for throwing the composition-applying means and the splints to which the composition is to be applied, out 85 of operative relation with each other.

2. In match-making machinery, the combination with means for applying a composition to splints, and driving means, of means 90 automatically operated by the slackening of speed of the driving means for throwing the composition-applying means and the splints to which the composition is to be applied, out of operative relation with each other.

3. In match-making machinery, the combination with mechanism for applying composition to splints, and driving means, of a 95 governor in connection with said driving means for automatically throwing the said mechanism into and out of operative relation. 100

4. In match-making machinery, the combination with mechanism for applying composition to splints, and driving means, of a 105 centrifugal governor in connection with said driving means, for automatically throwing the said mechanism into and out of operative relation.

5. In match-making machinery, the combination with composition-applying apparatus, of a carrier for presenting splints thereto, 110 a support for the carrier, driving means, a governor in connection therewith, and means under the control of the governor for moving the composition-applying means and carrier-support toward and away from each other. 115

6. In match-making machinery, the combination with composition-applying apparatus, of a carrier for presenting splints thereto, a support for the carrier, driving means, a 120 centrifugal governor in connection therewith, and means under the control of the governor for moving the composition-applying means and carrier-support toward and away from each other. 125

7. In match-making machinery, the combination of composition-applying means, carriers arranged to travel thereover, a drive-shaft, a governor in connection therewith, and means controlled by the governor for 130

moving the composition-applying means and splint-carrier laterally with respect to each other.

5 8. In match-making machinery, the combination with a composition-applying roller, of a splint-carrier adapted to travel thereover, and a centrifugal governor for raising and lowering the roller with respect to the path of movement of the splint-carrier.

10 9. In match-making machinery, the combination with a composition-applying roller, of a splint-carrier arranged to travel thereover, a drive-shaft, a governor in connection with said drive-shaft, and intermediate connections between the governor and roller, 15 whereby the governor, in its operation, will raise and lower the said roller toward and away from the splint-carrier.

20 10. In match-making machinery, the combination of a composition-tank, a roller therein, a splint-carrier arranged to travel

over the tank and roller, a centrifugal governor, and means controlled thereby for raising and lowering the tank and roller bodily toward and away from the path of movement of the splint-carrier. 25

11. In match-making machinery, the combination with a composition-tank mounted to slide horizontally in horizontal ways, of a drive-shaft, a centrifugal governor connected thereto, and means intermediate the centrifugal governor and the tank, whereby the operation of the said governor will raise or lower the tank with respect to the ways upon which it is mounted. 30

In witness whereof I have hereunto set my hand this 17th day of April, 1906. 35

ALMON B. CALKINS.

Witnesses:

P. W. KIEVIT,
A. G. CALKINS.