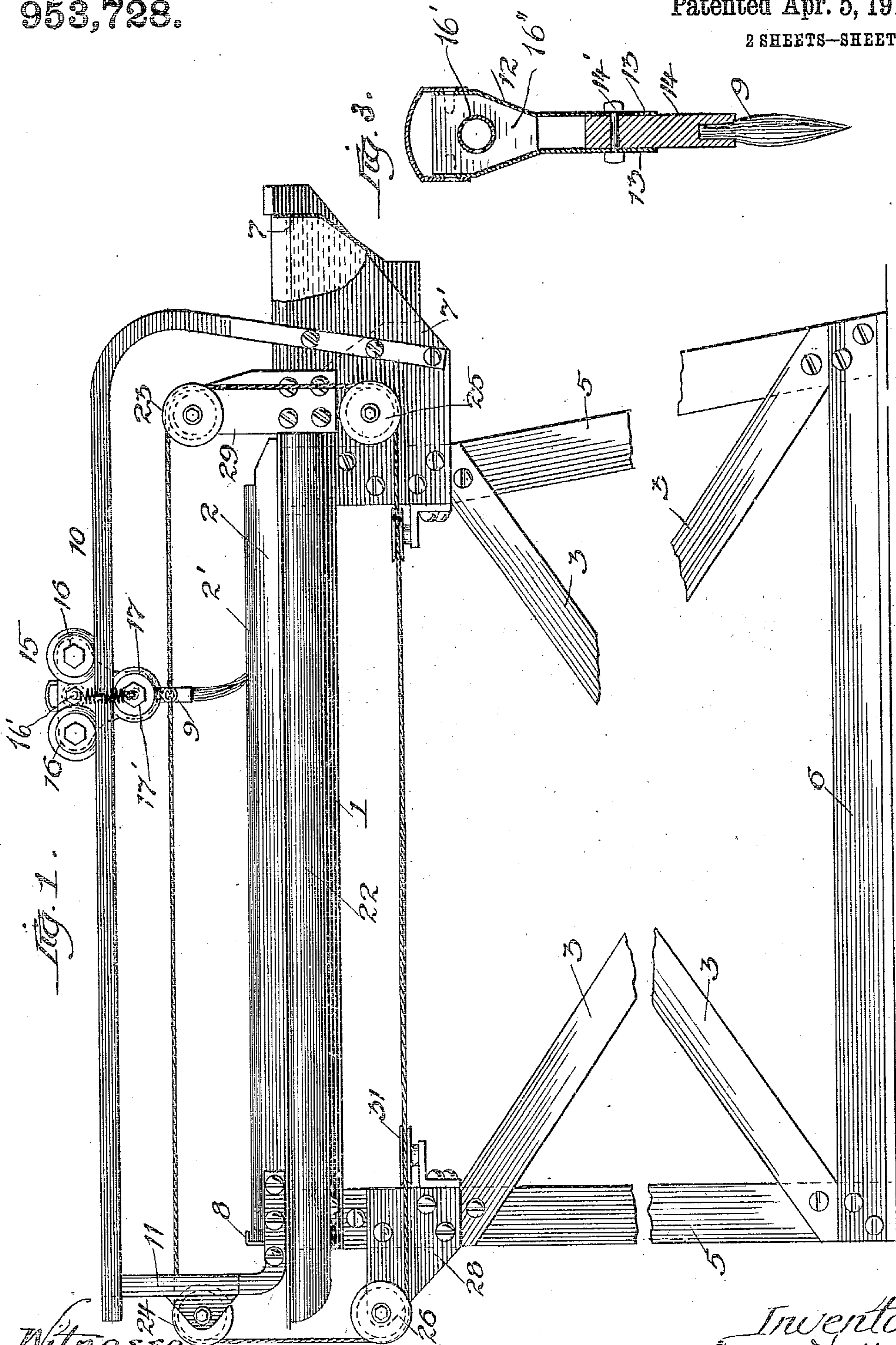


E. WILLIAMS.  
PAPER COATING MACHINE.  
APPLICATION FILED MAY 31, 1907.

953,728.

Patented Apr. 5, 1910.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

Fig. 2.

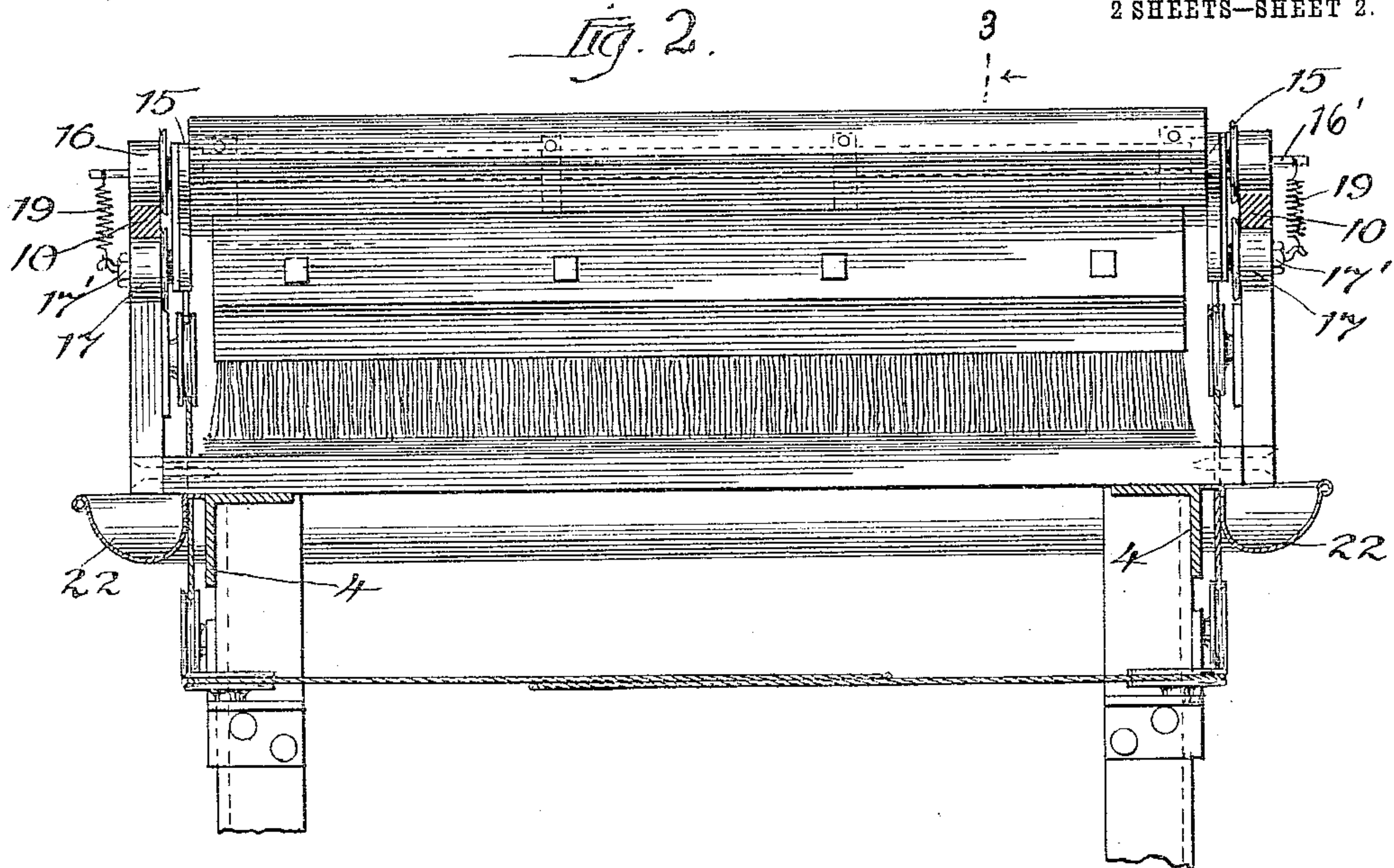
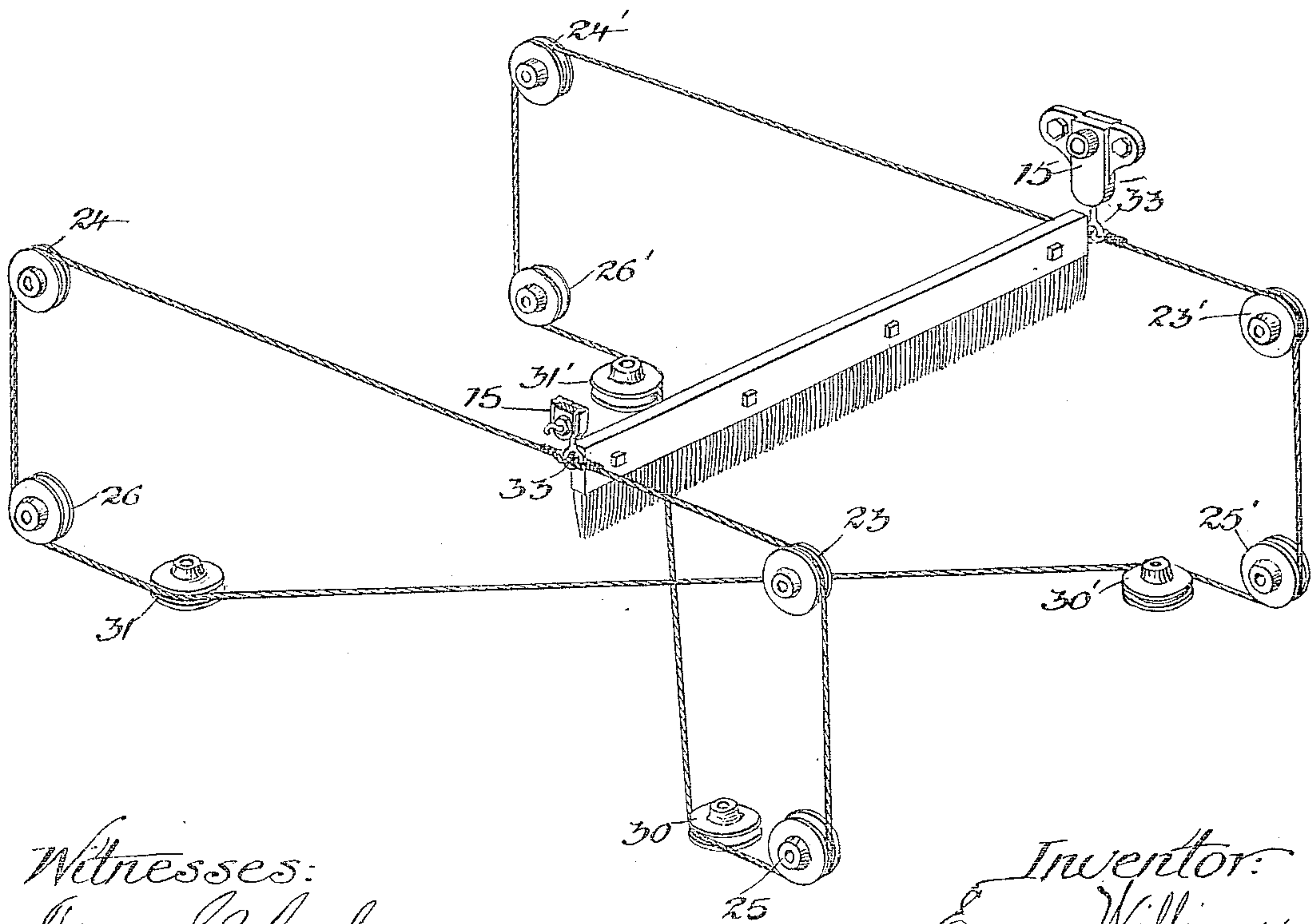


Fig. 4.



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# UNITED STATES PATENT OFFICE.

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## PAPER-COATING MACHINE.

953,728.

Specification of Letters Patent.

Patented Apr. 5, 1910.

Application filed May 31, 1907. Serial No. 376,432.

*To all whom it may concern:*

Be it known that I, EUGENE WILLIAMS, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Paper-Coating Machines, of which the following is a specification.

This invention relates to a coating apparatus for coating or painting sheets of paper or analogous material, and in general construction is similar to that set forth in my prior patent, No. 773840.

Among the salient objects of my invention are to provide a construction whereby the pigment or natural coloring matter may be universally and evenly applied to the paper; to provide a construction which permits the paper to be evenly coated with a minimum and definite number of sweeps of the brush; to provide a construction which prevents binding of the brush wheels upon their respective rails and at the same time maintains and insures a movement of the brush at right angles with the sides of the table; and in general to provide a simple and efficient construction of the character referred to.

The invention will be readily understood from the following description, reference being had to the accompanying drawings in which—

Figure 1 is a side elevation of my device, parts being broken away to reduce the size of the drawing and to show the interior of the color tank. Fig. 2 is an enlarged cross-sectional detail, showing the manner of supporting the brush and hangers on the trolley head. Fig. 3 is a transverse sectional view taken through lines 3—3 of Fig. 2 and looking in the direction of the arrows. Fig. 4 is a perspective view of the brush, showing diagrammatically the manner of arranging the guiding belt.

Referring to the drawings, 1 designates the table having a horizontal top 2, upon which the paper 2' to be coated is placed. In order to give the table sufficient stability, it is provided at either side with cross supports 3—3 and side rails 4—4, suitably secured to the table legs 5—5. The bottom rails 6 further add to its stability. At one end of the table is provided a fountain or color tank 7 for the paint or coating fluid, into which the brush end is adapted to be

immersed. On the top of the table at the opposite end is secured a metal strip 8 and bent inwardly at its top to form a stop plate against which the paper lies flush while it is being coated. The brush 9 is secured to the traveling carriage which is supported above the table and is adapted to travel across the track rails 10—10 which extend along either side of the table. At one end, the rails 10 are bent downwardly and secured to the plate 7' which serves also to support the fountain 7. At their other ends, the rails are supported by standards 11 secured to the table.

Describing now the brush carriage proper, 12 designates a trolley head which extends transversely of the table and has side plates which form depending jaws 13, between which the brush head 14 is clamped by suitable through bolts 14'. To each end of the trolley head is pivotally secured a triangular truck plate 15 by means of the supporting rod 16' extending through space plates 16'' secured in the head 12 as seen clearly in Fig. 4. Upon each plate 15 are journaled two upper wheels 16 adapted to ride in the upper sides of their respective track rails. A lower wheel 17 is journaled upon the stud 17' which is mounted to move vertically in a slide way (not shown) formed in its respective truck plate 15. In order to keep the lower wheels in constant bearing with their respective track rails, each stud 17' is provided with a spring 19 secured at one end of the stud and at the other to an extension of the rod 16'. It will thus be seen that the wheels can freely travel upon the track rails but at the same time the ends of the trolley head are kept in firm bearing with the rails.

At the sides of the coating table, are secured gutters 22 for receiving any drip or overflow of the coating fluid during the operation of the apparatus.

Heretofore in a device of this character difficulty has been experienced in preventing binding of the truck wheels upon the rails and also in securing a traveling of the brush at exact right angles to the sides of the table. To overcome these defects and as an important feature of my invention, I provide an endless belt fastened to either end of the brush and trained over a series of belt sheaves. Describing this construction in detail, vertically-disposed sheaves 23—23' are



journaled on supporting plates 29 which are  
 secured at the top of the table at one end of  
 the latter. At the other end of the table  
 and in the same plane with the sheaves  
 23—23' are journaled a pair of similar  
 5 sheaves 24—24'. Directly beneath the  
 sheaves 23—23' are respectively journaled  
 lower sheaves 25—25'. At the other end of  
 the table are similarly journaled lower  
 10 sheaves 26—26', except that they are placed  
 slightly outside of the vertical plane of the  
 sheaves 24—24'. In order that the lower  
 sheaves 26—26' may be approximately be-  
 15 neath their respective upper sheaves, they  
 are journaled to brackets 28 secured to the  
 legs 5, as seen clearly in Fig. 1. In a hori-  
 zontal plane approximately coincident with  
 the lower peripheries of the sets of lower  
 sheaves and at right angles thereto, are  
 20 journaled, on brackets 32, four sheaves  
 30—30' and 31—31', two at each side of the  
 table, as seen clearly in Fig. 4. The outer  
 part of the periphery of each of the hori-  
 zontal sheaves coincides with the lower part  
 25 of the periphery of each of their respective  
 vertical sheaves.

Describing now the manner in which the  
 endless belt is trained over the sheaves and  
 starting for example with pulley 23, the belt  
 30 is trained from the latter over sheaves 24  
 and 26 to horizontal sheave 31, thence across  
 to sheave 30', and around sheaves 25' and  
 23' to sheaves 24', thence downwardly to  
 sheave 26' over sheave 31' across to sheave  
 35 30 and up over sheave 25 back to sheave 23.  
 The upper laps of the belt are integrally  
 connected to the truck plates 15 by suitable  
 eyes 33—33 which are so arranged that the  
 eyes may easily ride by the upper sheaves  
 40 23—23' when the brush is being immersed in  
 the liquid. From the arrangement of the  
 belt described it will be seen that as the  
 brush moves across the paper it will at all  
 times be at exact right angles to the sides of  
 45 the table but will have oscillatory movement  
 inasmuch as the truck plates 15 are pivotally  
 connected to the trolley head 12. As herein-  
 before stated this arrangement of the belt  
 also prevents binding of the wheels upon  
 50 their respective rails.

While I have shown and described a pre-  
 ferred embodiment of the invention, yet it  
 will be understood that the details may be  
 somewhat modified without departing from  
 55 the spirit of the invention.

I claim as my invention:

1. In a paper coating machine, the com-  
 bination with a table, of a pair of laterally  
 separated track rails, a traveling carriage  
 60 upon said rails, a coating brush supported  
 by said carriage, a means for maintaining  
 uniformity of movement of the two ends of  
 said carriage comprising parallel rows of  
 guides supported by the table, an endless  
 65 belt secured to the opposite ends of said

traveling carriage and trained around said  
 guides, said belt being crossed beneath the  
 table by being trained around diagonally  
 opposite members of said guides.

2. In a paper coating machine, the com- 70  
 bination with a table, of a pair of track  
 rails, a traveling carriage upon said rails  
 provided at either end with journal exten-  
 sions, a coating brush pivotally mounted on  
 said carriage and means for maintaining 75  
 uniformity of movement of the two ends of  
 said carriage, comprising a series of belt  
 sheaves arranged partly above and partly  
 below the plane of the table, and an endless  
 belt trained around said sheaves, crossed be- 80  
 low the table and secured to the respective  
 ends of said carriage.

3. In a paper coating machine, the com-  
 bination with a table, of a pair of track rails  
 arranged at opposite sides of the table, a 85  
 traveling carriage upon said rails, a coating  
 brush secured to said carriage and means  
 maintaining uniformity of movement of the  
 carriage, comprising two series of sheaves  
 arranged in vertical parallel planes at the 90  
 respective sides of the table, a third series  
 arranged in a horizontally-disposed plane  
 below the table, and an endless belt trained  
 around all of said sheaves, crossed below  
 the table by being trained around diago- 95  
 nally opposite members of said sheaves and  
 secured to the respective ends of the car-  
 riage.

4. In a paper coating machine, the com-  
 bination with a table, of a pair of track rails 100  
 arranged at opposite sides of the table and  
 bent downwardly at one end, a traveling  
 carriage upon said rails, a coating brush  
 pivotally secured to said carriage, a coating  
 fountain at one end of said table into which 105  
 said brush is adapted to be immersed, means  
 for maintaining uniformity of movement of  
 the carriage comprising two series of ver-  
 tical sheaves arranged in parallel planes at  
 the respective sides of the table, a pair of 110  
 sheaves rotatably journaled in a plane at  
 right angles to said other sheaves, and an  
 endless belt trained around all of said  
 sheaves crossed below the table by being  
 trained around diagonally opposite members 115  
 of said sheaves and secured at opposite ends  
 of said traveling carriage.

5. In a paper coating machine, the com-  
 bination with a table, of a coating fountain  
 upon one end of said table, a pair of track 120  
 rails arranged at opposite sides of the table  
 and bent downwardly at one end toward  
 said fountain, a traveling carriage upon said  
 rails, a coating brush pivotally secured to  
 said carriage, and means maintaining uni- 125  
 formity of movement of the carriage com-  
 prising an endless belt trained around suit-  
 able guides and secured at opposite ends of  
 said carriage, said guides being so arranged  
 that the belt descends downward at points 130



adjacent to the fountain whereby the brush may be immersed in the latter.

5 6. In a paper coating machine, the combination with a table, of a coating brush adapted to fit across the upper face of said table, and means for maintaining uniformity of movement of the two ends of said brush comprising parallel rows of guides supported by the table, an endless belt connected to the opposite ends of said brush  
10 and trained around said guides, said belt being crossed beneath the table by being trained around diagonally opposite members of said guides.

15 7. In a paper coating machine, the combination with a table, of a coating brush adapted to move across the upper face of

said table, and means for maintaining uniformity of movement of the two ends of said brush comprising two series of sheaves arranged in vertical parallel planes at the  
20 respective sides of the table above and below the latter, a third series arranged in a horizontally disposed plane below the table and journaled at right angles to said first  
25 sheaves, and an endless belt trained around all of said sheaves, crossed below the table by being trained around diagonally opposite members of said horizontally disposed sheaves, and secured to said brush.

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