

No. 754,514.

PATENTED MAR. 15, 1904.

G. W. TAYLOR & J. W. SCOTT.
ATTACHMENT FOR CARDING MACHINES.

APPLICATION FILED JAN. 30, 1901.

NO MODEL.

4 SHEETS—SHEET 1.

Fig. 1.

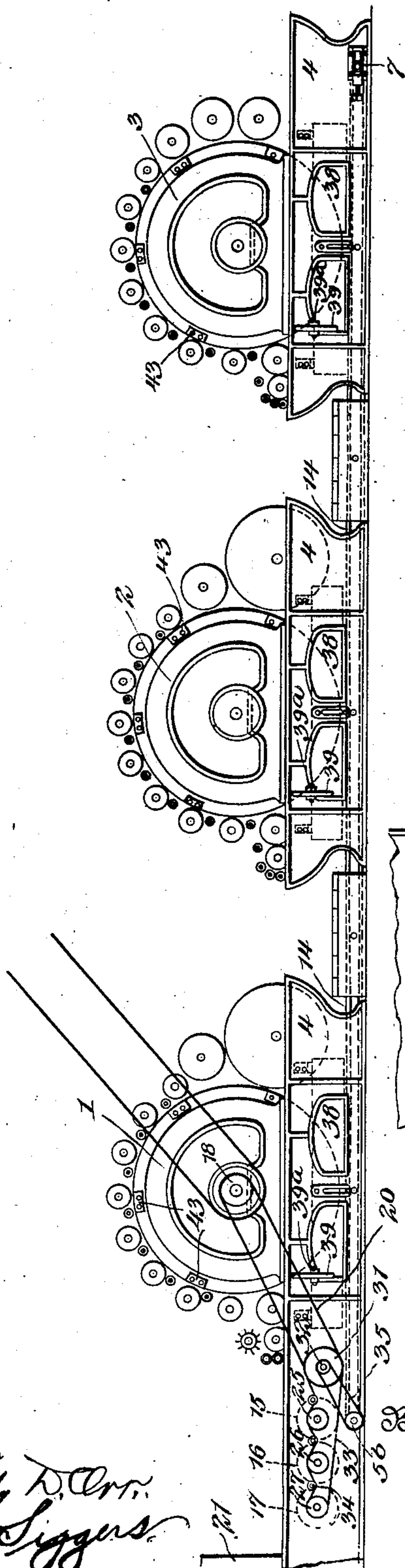
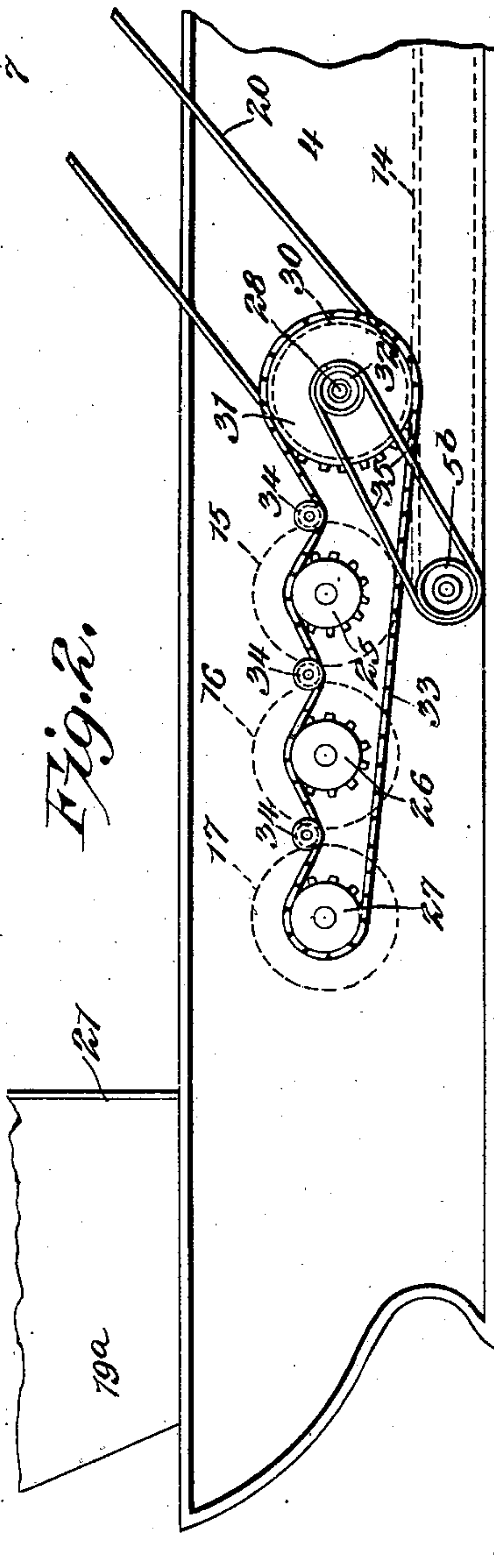


Fig. 2.



Witnesses
Howard D. Orr
John D. Liggers

James W. Scott
and George W. Taylor. Inventors.

E. J. Liggers

Attorney

No. 754,514.

PATENTED MAR. 15, 1904.

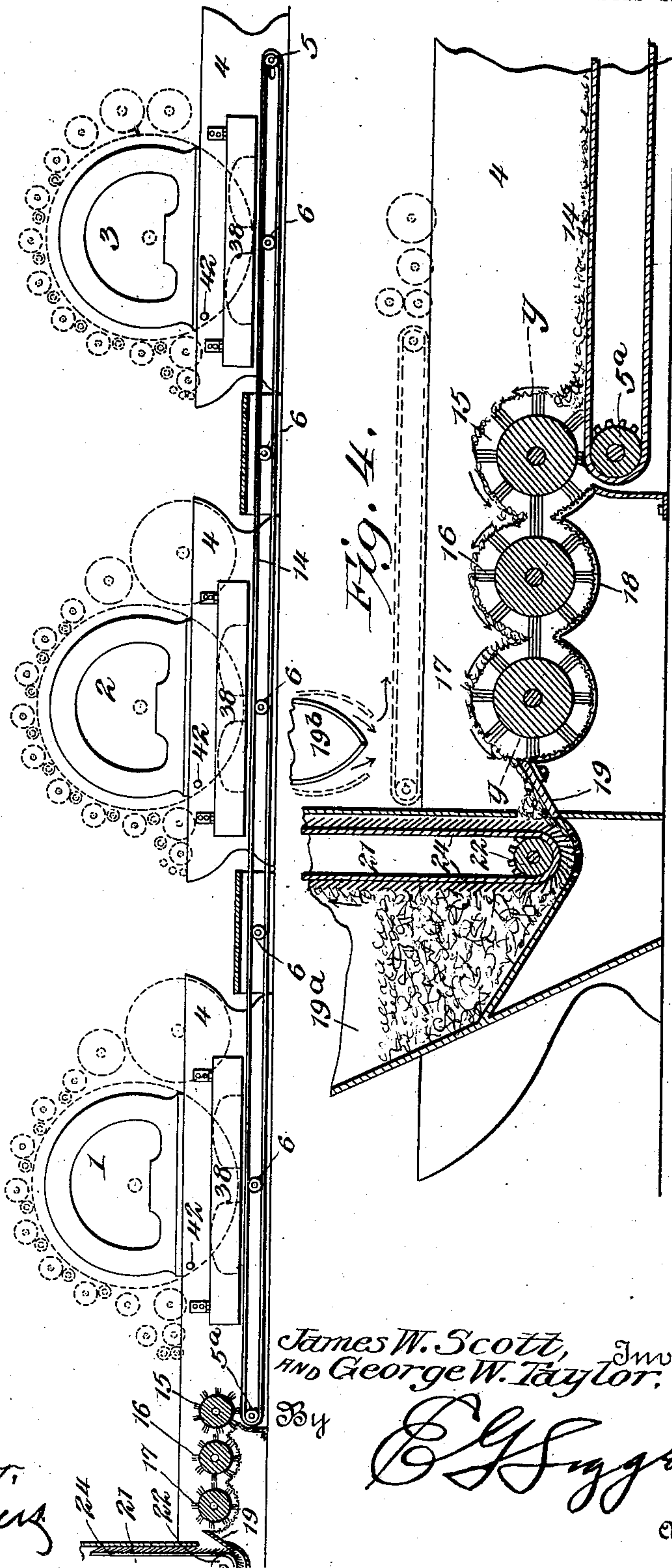
G. W. TAYLOR & J. W. SCOTT.
ATTACHMENT FOR CARDING MACHINES.

APPLICATION FILED JAN. 30, 1901.

NO MODEL.

4 SHEETS—SHEET 2.

Fig. 3.



James W. Scott, Inventors.
AND George W. Taylor.

By

E. J. Siggers

Attorney

Witnesses
Howard D. Orr
John B. Siggers

No. 754,514.

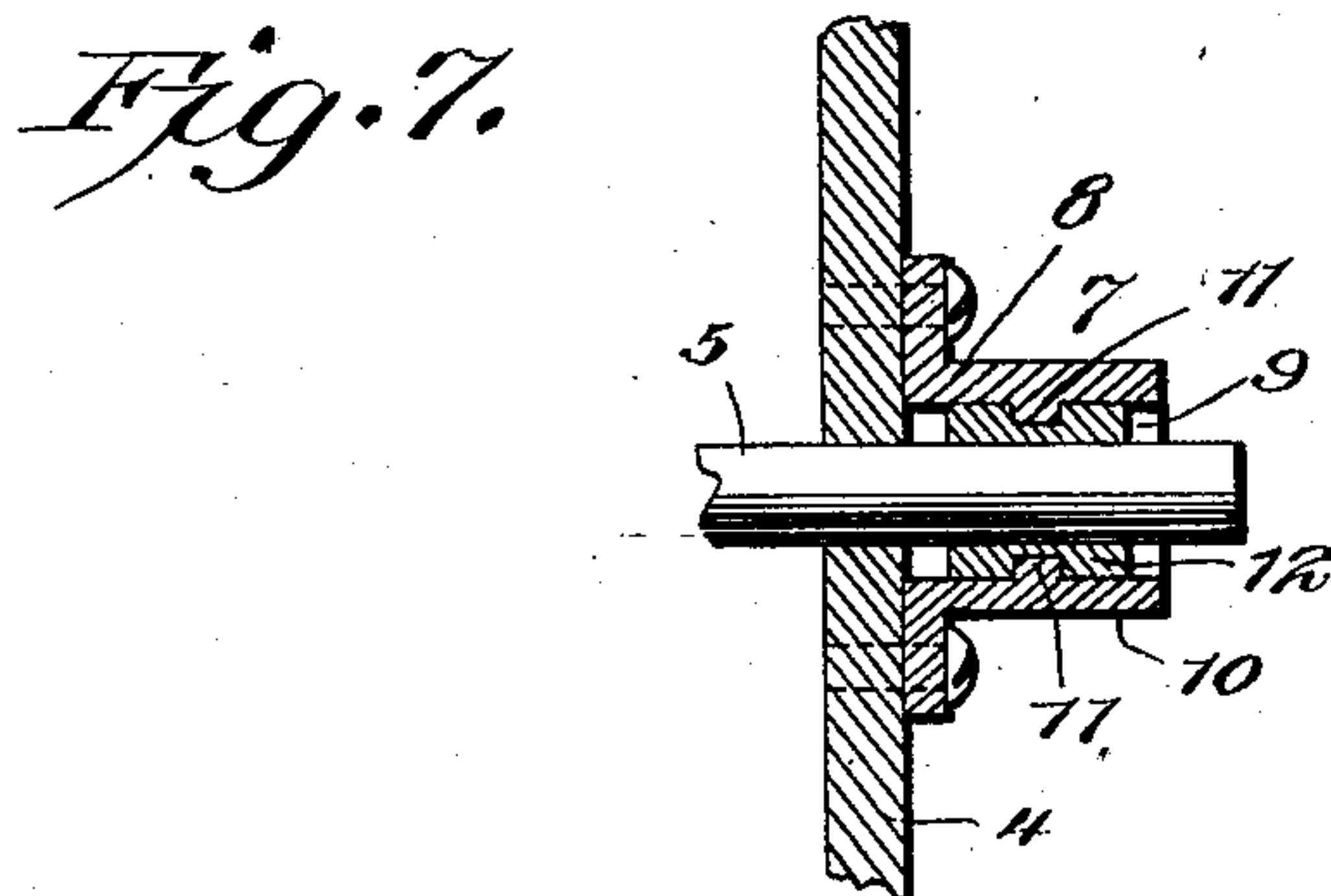
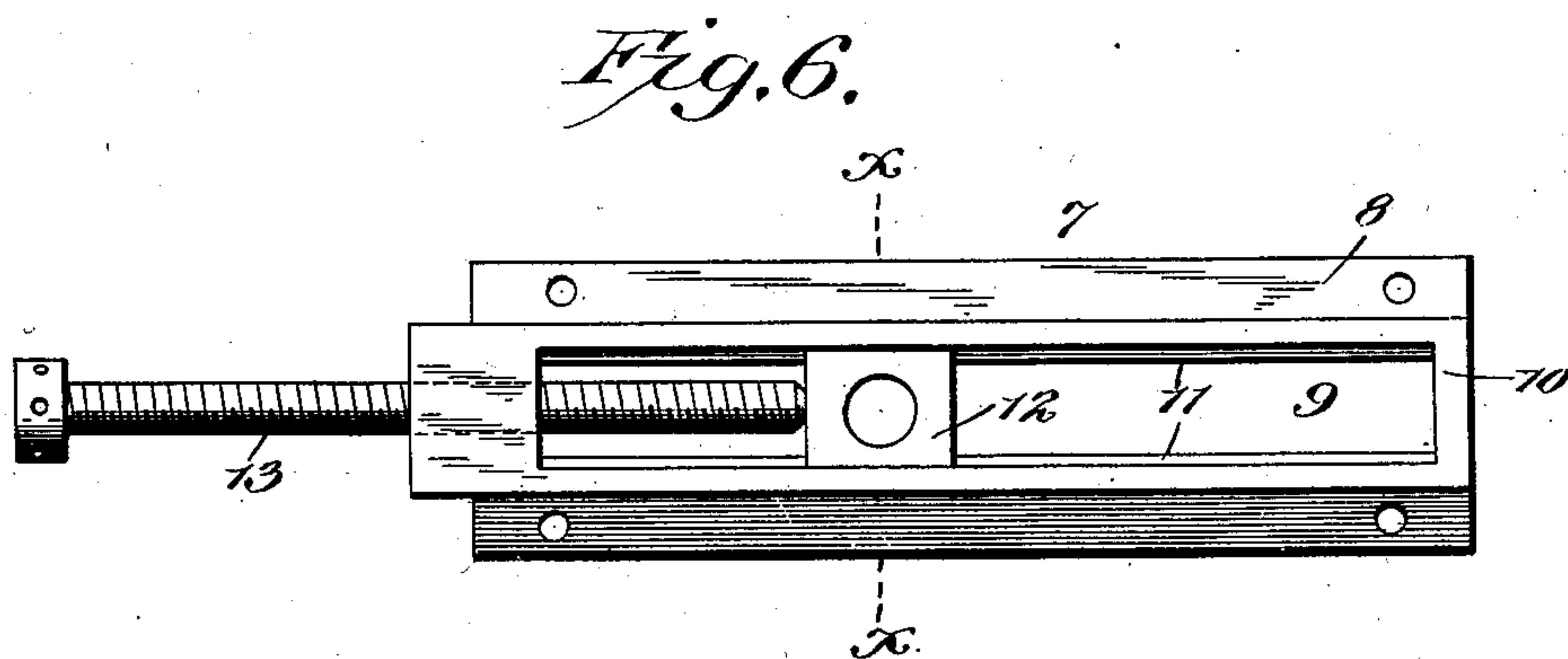
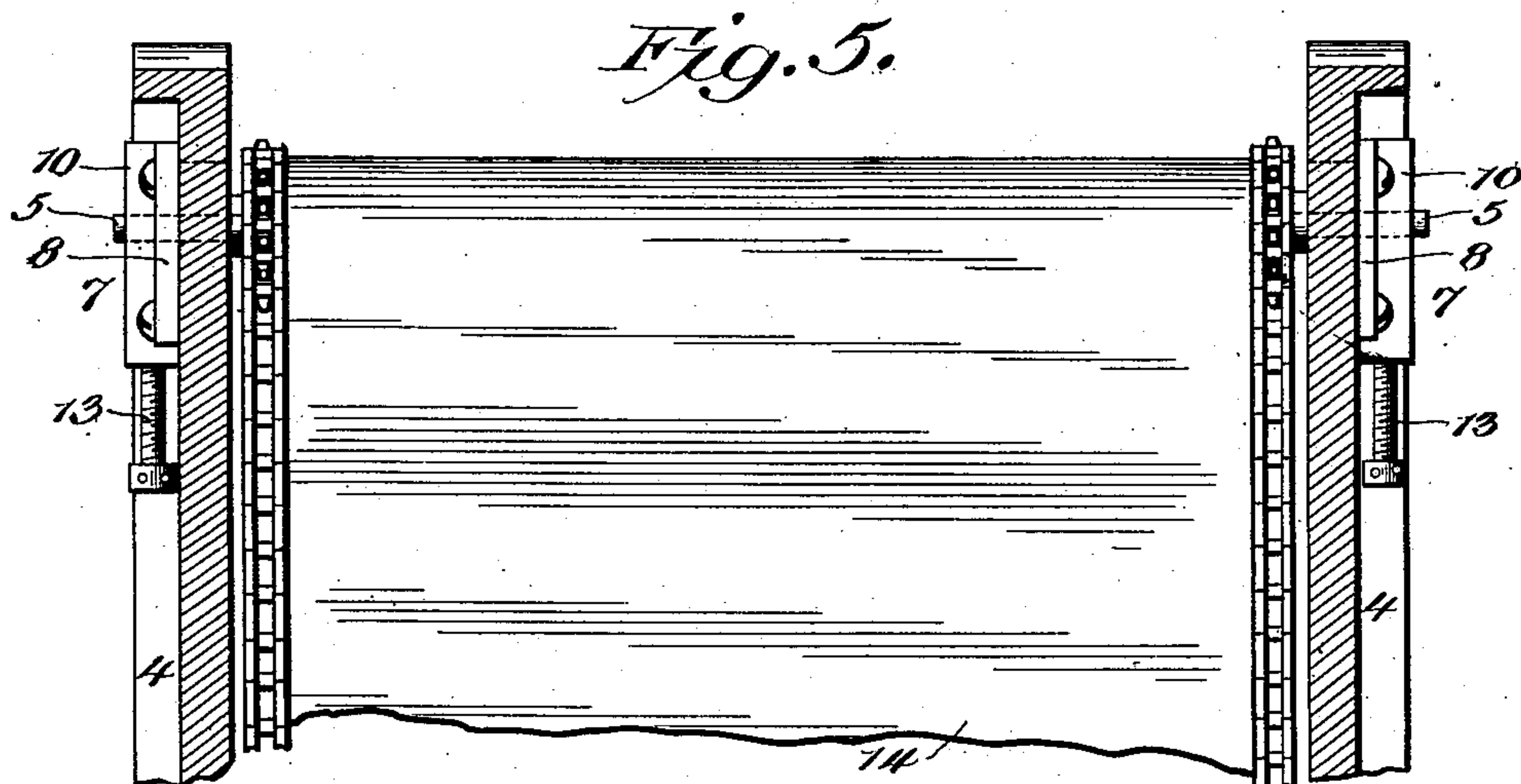
PATENTED MAR. 15, 1904.

G. W. TAYLOR & J. W. SCOTT.
ATTACHMENT FOR CARDING MACHINES.

APPLICATION FILED JAN. 30, 1901.

NO MODEL.

4 SHEETS—SHEET 3.



James W. Scott Inventors.
AND George W. Taylor.

By

E. J. Siggers

Attorney

Witnesses
Howard D. Orr.
John H. Siggers

No. 754,514.

PATENTED MAR. 15, 1904.

G. W. TAYLOR & J. W. SCOTT.
ATTACHMENT FOR CARDING MACHINES.

APPLICATION FILED JAN. 30, 1901.

NO MODEL.

4 SHEETS—SHEET 4.

Fig. 9.

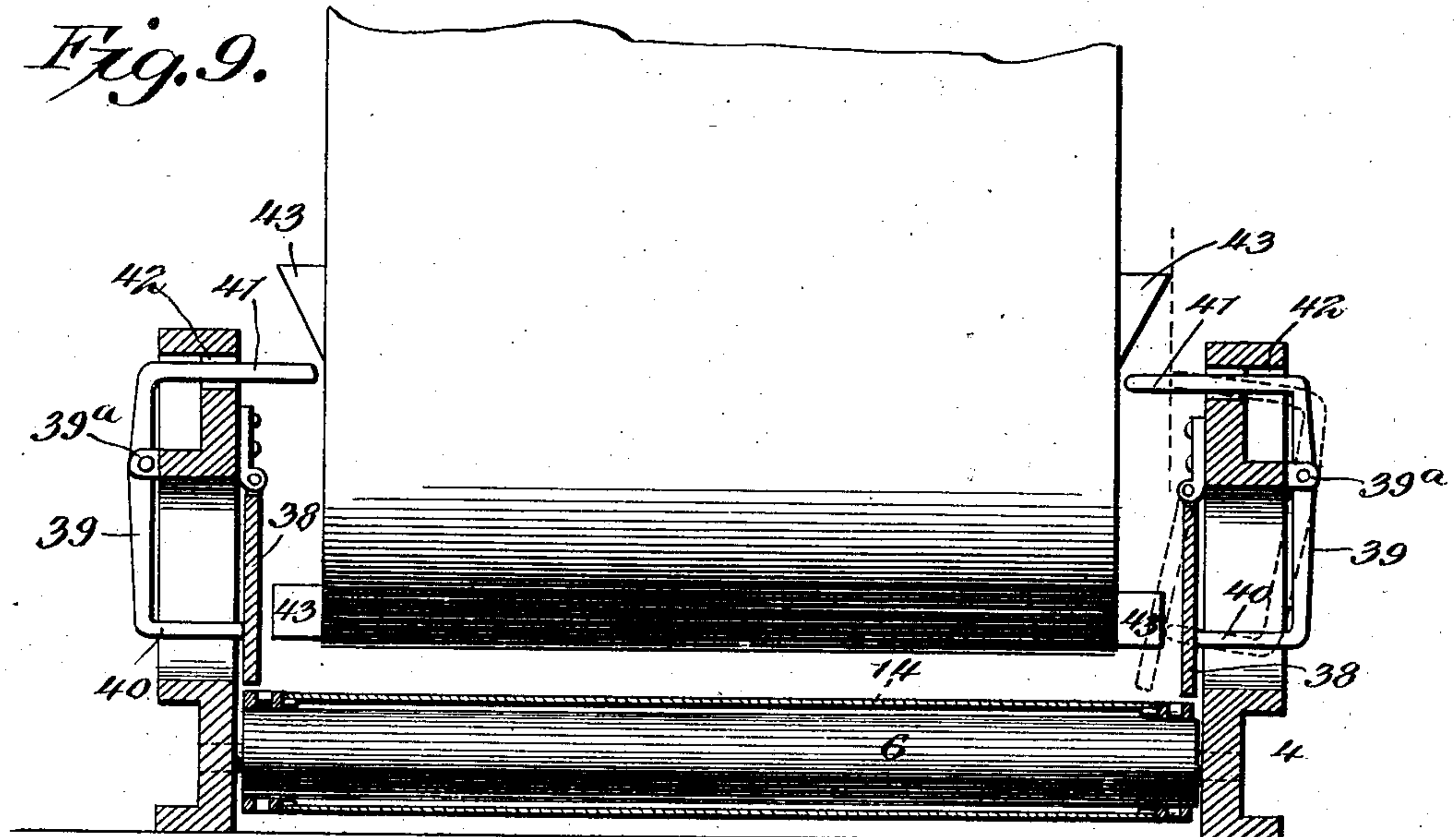
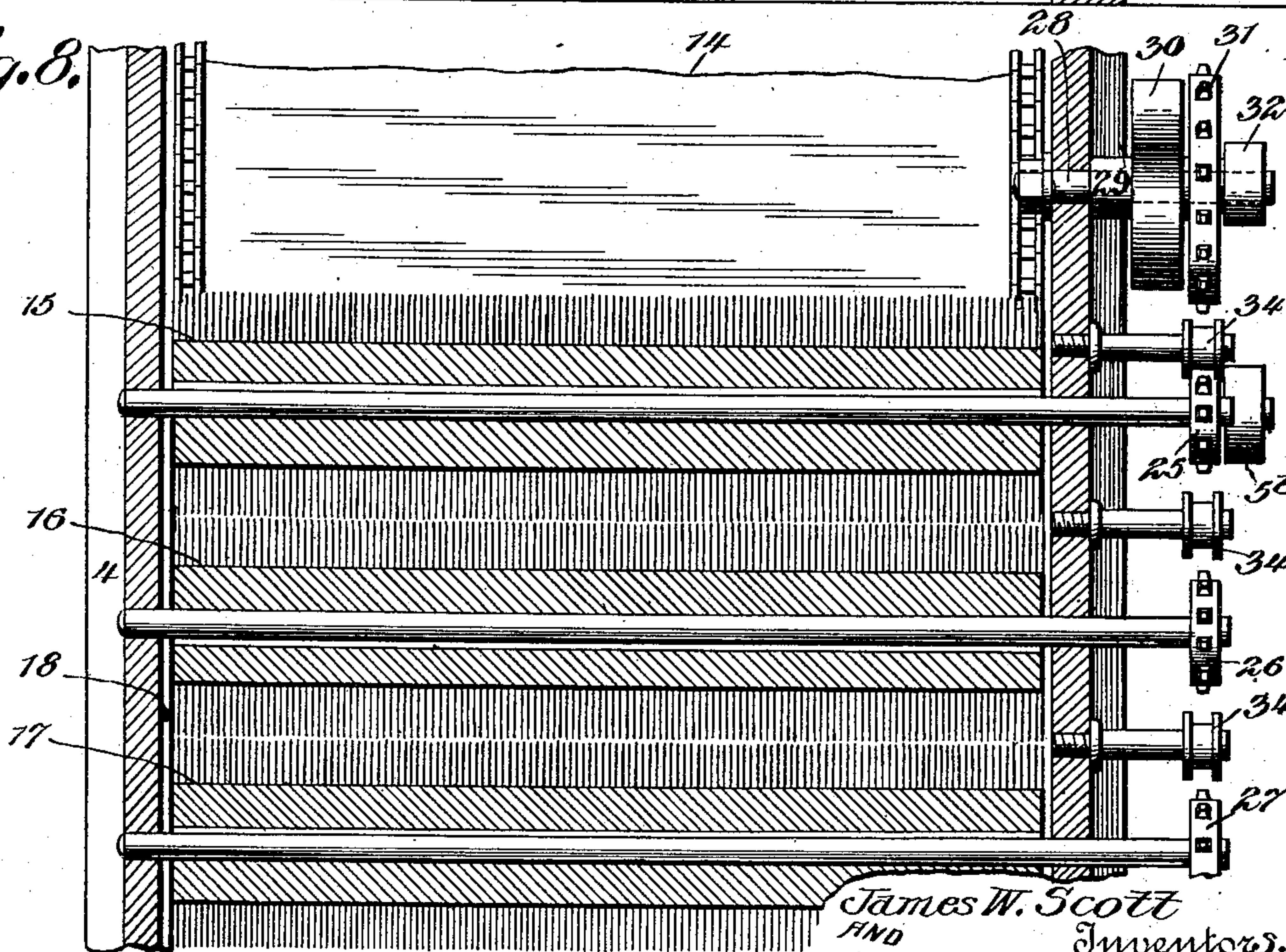


Fig. 8.



James W. Scott
AND
George W. Taylor.
Inventors.

Witnesses
Howard D. Orr.
John B. Siggers

By

E. J. Siggers

Attorney

UNITED STATES PATENT OFFICE.

GEORGE W. TAYLOR, OF BOSTON, MASSACHUSETTS, AND JAMES W. SCOTT, OF WARREN, MAINE.

ATTACHMENT FOR CARDING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 754,514, dated March 15, 1904.

Application filed January 30, 1901. Serial No. 45,358. (No model.)

To all whom it may concern:

Be it known that we, GEORGE W. TAYLOR, residing at Boston, in the county of Suffolk, State of Massachusetts, and JAMES W. SCOTT, residing at Warren, in the county of Knox and State of Maine, citizens of the United States, have invented a new and useful Attachment for Carding-Machines, of which the following is a specification.

10 This invention relates to mechanism for collecting short stock that falls from the breakers of a carding-machine and returning the same to the feeding device of the carding series; and it has for its object the provision
15 of means for collecting, conveying, dusting, and returning to the feed of the first breaker short or loose stock which falls from the breakers during the carding operation.

Further objects of the invention are the
20 provision of means located beneath the carding series for catching, holding, and carrying the short stock to a suitable receptacle, the provision of a suitable dusting device whereby the stock that falls from the breakers during the carding operation may be dusted and
25 sifted, the provision of suitable means whereby the loose stock which falls from the carding series upon the collecting means is prevented from falling therefrom, and the pro-
30 vision of suitable means for carrying the loose stock that falls from the breakers when collected back to the feeding device of the first one of the carding series.

In the carding-machines now in general use
35 each card has a cylinder ranging from about forty to sixty inches in diameter which revolves at the rate of from ninety to one hundred revolutions per minute. The object of this cylinder is to convey the stock that enters
40 the breaker from the different carding-points therein to the doffer, from which point it is removed by the usual comb. During this carding operation there is a great deal of short stock and dirt that falls from the cylinder,
45 owing to its rapid revolution, beneath the cards and at the sides thereof. This stock is either lost or greatly damaged by dropping to the floor, where it becomes dusty and ac-

cumulates grease, &c. It has heretofore been customary to gather this waste from the floor 50 and remove it to the picking-room, where it was dusted and cleaned and then returned to the carders in lots. This method entails a considerable amount of extra labor, besides making the stock with which it is mixed of poorer 55 quality and the sliver therefrom uneven. By the use of our invention all this extra labor and unevenness of the sliver is avoided, as by its use the waste is prevented from falling into the grease and dirt of the floor by being caught 60 upon an endless conveyer located and traveling beneath the series of cards and by mechanical means carried to a duster and thence by means of an elevator back to the feed of the first breaker, thus practically doing away with 65 "waste," as the term is generally understood, and consequently effecting a great saving in the material operated upon. The amount of this saving will be more fully appreciated when it is stated that the price of the average 70 stock ready for carding ranges from twenty-five cents to seventy-five cents per pound, depending, of course, upon the class of goods to be manufactured, and the amount of short stock lost or damaged by the old method averages about sixteen per cent. of the material 75 carded. In other words, by the use of our invention about sixteen per cent. of the value of the stock is saved. A method for saving the material now lost has been long sought; 80 but so far as we are aware there has been no practical device produced until the present one whereby this saving could be made.

The invention consists, essentially, in mechanism for collecting and returning the short 85 stock that falls from the breakers to the feeding device of the carding series.

The invention further consists of an endless conveyer located beneath the breakers, a series of sifting and dusting brushes, and a conveyer or elevator for taking the stock from 90 said brushes back to the feeder of the first breaker and is intended to be employed in connection with any of the well-known feed devices for carding-machines; but in practice 95 we prefer to use it with what is known as the

"Bramwell feeder," modified somewhat to adapt it for use in connection with our invention.

The invention still further consists in the novel construction and arrangement of the several parts of the device, as hereinafter described, illustrated in the drawings, and more particularly pointed out in the claims hereunto appended.

Referring to the drawings, Figure 1 is a side elevation of a series of breakers arranged in a carding series having applied thereto our improved means. Fig. 2 is an enlarged view of a portion of the belt-operating mechanism and the brush-operating mechanism. Fig. 3 is a view similar to Fig. 1, showing the breakers partly in full and partly in dotted lines and illustrating in full lines the devices for collecting, conveying, and dusting the loose stock. Fig. 4 is a view similar to Fig. 2, but showing the end of the endless conveyer, the dusting-brushes, and the elevator in section. Fig. 5 is an enlarged sectional detail of the endless conveyer and its attached mechanism secured at or near the rear end of the finisher. Fig. 6 is a detail view of the tightening device for the conveyer. Fig. 7 is a section taken on the line *x x* of Fig. 6. Fig. 8 is a horizontal section, on an enlarged scale, taken through the brushes on line *y y* of Fig. 4. Fig. 9 is a vertical cross-section through a pair of the frames of one of the breakers, showing means for preventing the loose stock falling from the conveyer by pushing it toward the center thereof.

Referring to the drawings by numerals, 1 and 2 represent, respectively, the first and second breakers, and 3 indicates the finisher of the carding series. These three machines each consist of a suitable frame 4, provided with the usual cylinder, rollers, and combs, and as they form no part of the present invention a further description thereof is deemed unnecessary.

Between the sides of the frame of the first breaker we mount a roller 5^a, provided on one end with a suitable pulley 5^b. At proper intervals beneath the first breaker and each of the succeeding ones are placed suitable idler-rollers 6, for a purpose to be hereinafter stated. At the rear of the frame of the finisher, between the sides thereof, we journal a roller 5, corresponding to the roller 5^a in the frame of the first breaker. This roller 5 is suitably mounted in an adjustable tensioning device 7, secured on the sides of the frame of the finisher, consisting of a plate or bracket 8, having a slot 9 in an offset portion 10 thereof, said offset portion being provided with tongues 11. Mounted in said slot and engaging said tongues is a slidable journal-bearing 12, which carries the ends of the roller 5. 13 is a suitable adjusting-screw passing through one end of said offset portion and adapted to shift the bearing 12 in said slot for the pur-

pose of adjusting the roller 5, carried thereby. 14 is a traveling endless conveyer or carrier of any suitable construction, preferably of canvas, extending over the roller 5 in the frame of the finisher beneath said finisher, beneath the second breaker, and beneath the first breaker and mounted upon the roller 5^a and is for the purpose of collecting the stock that falls from the breakers during the carding operation.

15, 16, and 17 are revolving dusting-brushes suitably journaled in proper bearings and have fingers or bristles thereon, preferably of wire, of such length that the fingers of one brush will practically touch those of an adjoining brush when the brushes are operated and provided on their ends with sprocket-wheels, the brush 15 being mounted immediately above and having the ends of its fingers or bristles adapted to contact with the end of the conveyer 14 for the purpose of gathering up the loose stock on said conveyer as it passes thereunder and passing it to the other dusting-brushes 16 and 17, between which the stock is thoroughly sifted and dusted. 18 is a screen, of wire or other suitable material, located at one end of the conveyer 14 and extending beneath the bristles 15, 16, and 17 and terminating in a waste-hopper. This screen is for the purpose of permitting the escape of the dust and dirt that falls from the stock as it passes over said brushes and of preventing the escape of fiber. 21 is the casing of the feeder, which extends from said brushes up to the feeder proper of the first breaker. At or near the bottom of this casing is secured a roller 22, and at the top of this casing is a similar roller. Mounted in the casing on these rollers is an endless elevator 24, provided on its outer surface with wires or fingers adapted to engage the stock passed into the waste-hopper 19 from the revolving brushes and carry it up to the main hopper 19^a of the feeder, whence it is passed to the first breaker. Each of the revolving brushes 15, 16, and 17 has geared upon its outer end a sprocket 25, 26, and 27.

28 is a suitable journal secured in one side of the frame of the first breaker and has mounted thereon a sleeve 29, upon which is rigidly secured a large pulley 30, a sprocket-wheel 31, and a small pulley 32.

33 is a sprocket-chain running over the sprocket 31 and the sprockets 25, 26, and 27 on the ends of the revolving brushes which receive motion therefrom.

34 represents idler-pulleys mounted upon journals secured to the sides of the frame of the first breaker for tightening the sprocket-chain 33.

35 is a belt which communicates motion from the pulley 32 to the pulley 5^b on the end of the roller 5^a.

18 is a pulley mounted on the shaft of the cylinder of the first breaker, and 20 is a belt for communicating motion from said cylinder

to the pulley 30, whereby the apron and dusting-brushes will be operated.

Beneath each breaker to the sides of the frame on each side is suitably hinged a vibrating board 38.

39 is a bracket pivoted at its center to a suitable bearing 39^a on the outside of the frame, one arm, 40, of which bears against the vibrating plate 38, and the other arm, 41, passes through a suitable opening 42 in said frame and is adapted to be engaged and operated by a series of cam-lugs 43, secured on the sides of the cylinder of each of the breakers, so that when the cylinder is revolved the cam-lugs 43 will contact with the end of the arm 41 and thrust the same outward, which will cause the arm 40 of the bracket to be thrust inward and push the vibrating board toward the center of the conveyer 14. Each of these hinged vibrating boards is provided with two brackets, one at each end thereof. It is obvious that we may employ other means or devices for preventing the loss of waste or short stock from the endless conveyer; but we prefer to use the vibrating mechanism herein shown and described.

The elevator 24, which carries the cleaned and dusted stock to the feeding device of the first breaker, is preferably operated by mechanism connected with the feeding device, but may be operated in connection with the dusting mechanism or from any other suitable source of power.

19^b indicates suitable weighing mechanism constituting an element of the feeder and disposed to weigh the fiber prior to its delivery to the first breaker.

The operation of our invention is as follows: The stock, having been prepared for carding, is fed into the first breaker, preferably by a Bramwell feeder, passes beneath the several rollers, and is brought out beneath the doffer, from which it is removed by the usual combs. It is then carried by the usual means to and through the second breaker, and thence through the finisher, and is disposed of in the usual manner. As the stock goes through the breakers a portion of the short material falls therefrom onto the endless conveyer 14 and as said conveyer travels carries said stock forward to the revolving brushes, where it is picked up by the fingers on one of said revolving brushes and passed to the others and by reason of said brushes revolving sifted thereover, the dust and dirt falling through the screen beneath into any suitable receptacle, while the stock passes over said brushes into the waste-hopper and is thence carried by the belt or elevator back to the feeder (preferably one of the Bramwell type) of the first breaker. The vibrating plates operated by the different cylinders serve the purpose of guiding the falling stock upon the endless conveyer 14 and tossing said short stock which falls from the breakers toward the middle of the con-

veyer, thus preventing it falling off and being lost at the sides. Between the breakers are suitable platforms which span the endless conveyer for the purpose of permitting passage therebetween.

In the specification and claims we shall refer to the short fibers as "waste" and shall apply this term indiscriminately, whether such fibers have been cleaned or not. Therefore it should be understood that when reference is made to waste conveyed to the cleaning devices such waste is a mixture of fiber and extraneous matter, while the same term as applied to the transfer from the cleaning devices to the feeder comprehends the short fibers which have been dusted and cleaned by passing over the brushes.

It is evident that the several devices herein shown and described may be changed or varied or some of them omitted without departing from the spirit of our invention. We do not, therefore, confine ourselves to the structures and mechanisms shown, but claim the same broadly, as we believe that we are the first to conceive and produce a practical device for accomplishing mechanically the rescue and saving of waste or short stock and mechanically returning the same to the feed of the carding-machines.

Having thus described the invention, what we claim is—

1. The combination with a carding-machine, of an endless conveyer located beneath the same to catch the waste therefrom, a horizontal series of cleaning-brushes disposed to receive the waste from the conveyer, and arranged in close relation to each other, whereby the waste is directly transferred from each brush to the next successively, mechanism for operating the conveyer and brushes simultaneously, a feed device for the carding-machine, and means for receiving the waste from the last brush of the series and conveying it to the feeding device.

2. The combination with a carding-machine, of an endless conveyer located beneath the same to catch the waste therefrom, a horizontal series of cleaning-brushes disposed to receive the waste from the conveyer, and arranged in close relation to each other, whereby the waste is directly transferred from each brush to the next successively, a feed device for the carding-machine, and an elevator disposed to receive the waste from the last brush of the series and convey it to the feeding device.

3. The combination with a carding-machine, of an endless conveyer located beneath the same to catch the waste therefrom, a horizontal series of cleaning-brushes disposed to receive the waste from the conveyer and arranged in close relation to each other, whereby the waste is directly transferred from each brush to the next successively, and a screen disposed horizontally beneath the cleaning-

brushes to prevent the escape of waste which may drop beneath the brushes.

4. The combination with a carding-machine and a feeder comprising a hopper, of a conveyor located below the machine to receive the waste and to carry it to the feed end of the machine, and an elevator disposed to convey the waste from the conveyor to the hopper and from the hopper to the carding-machine.

5. The combination with a carding-machine and a feeder comprising a hopper, of a conveyor located below the machine to receive the waste, a fiber-cleaning device disposed to receive the waste from the conveyor, and an elevator disposed to convey the fibers to the hopper from the cleaning device and from the hopper to the carding-machine.

6. The combination with a carding-machine, of a conveyor located therebelow, a series of rotary cleaning-brushes disposed to receive the fiber from the conveyor, an endless elevator constituting an element of a feeder for the machine, and means for presenting the fiber from the cleaning-brushes to the return or descending run of the elevator.

7. The combination with a carding-machine, of a feeder comprising an endless elevator, and a hopper disposed at one side thereof, a waste-hopper disposed at the opposite side of the elevator, a cleaning device disposed to deposit cleaned fibers in the waste-hopper for conveyance to the main hopper by the elevator, and a conveyor located below the carding-machine and disposed to convey the waste therefrom to the cleaning device.

8. The combination with a carding-machine, of a feeder comprising a hopper and an endless elevator disposed to convey fiber from the hopper to the machine, a waste-hopper disposed to deliver fiber to the elevator at the side opposite the main hopper, a conveyor located below the machine to receive the waste therefrom, and a series of cleaning-brushes disposed to convey waste from the conveyor to the waste-hopper and to clean said waste in transit.

9. The combination with a carding-machine, of a feeder comprising a hopper and an endless elevator disposed to convey fiber from the hopper to the machine, a waste-hopper disposed to deliver fiber to the elevator at the side opposite the main hopper, a conveyor located below the machine to receive the waste therefrom, a series of cleaning-brushes disposed to convey the waste from the conveyor to the waste-hopper and to clean said waste in transit, and a screen disposed directly below the brushes to prevent the escape of such fiber as may drop between the brushes during the operation of the device.

10. The combination with a series of carding-machines, of a feeder for the first machine of the series, said feeder comprising an endless elevator, a hopper disposed at one side thereof, and a waste-hopper disposed at the opposite side of the elevator, a conveyor ex-

tending continuously under the entire series of carding-machines and operated to convey the waste from said machines to the feed end of the first machine of the series, and a cleaning device disposed to receive the waste from the delivery end of the conveyor and to deposit it in the waste-hopper of the feeder for conveyance by the elevator from said waste-hopper into the main hopper for subsequent delivery to the first machine.

11. The combination with a series of carding-machines, of an endless conveyor located beneath the same to catch the waste falling from each individual machine of the series and to return the same to the feeder of the first machine, a vibrating device located on each side of and slightly above said conveyor, and supported by a machine-frame to bank the waste toward the middle of the conveyor to prevent its escape as the portion of the conveyor acted upon passes through the interval between the machines, means for operating said conveyor, and means for operating said vibrating device directly from one of the machines.

12. The combination with a carding-machine including a cylinder, of a conveyor located below the same to catch the waste falling therefrom, vibratory plates disposed along opposite sides of the conveyor, and a series of operating devices carried by the cylinder of the machine, and disposed to effect the intermittent vibration of the plates.

13. The combination with a carding-machine including a cylinder, of a conveyor located therebelow to catch the waste falling therefrom, vibratory plates disposed along opposite sides of the conveyor, a series of lugs mounted upon the cylinder, and mechanism intermittently operated by said lugs to effect the vibration of the plates.

14. The combination with a carding-machine, of a conveyor located therebelow to catch the waste falling therefrom, vibratory plates disposed along opposite sides of the conveyor, movable brackets operatively related to the plates, and means operated by the machine to intermittently vibrate the brackets.

15. The combination with a carding-machine, of an endless conveyor located beneath the same to catch the waste therefrom, a horizontal series of rotary cleaning-brushes rotating in the same direction and substantially in contact with each other, one of said brushes being arranged to wipe the waste from the conveyor and to carry it around the upper side of said brush, to be delivered directly to the next succeeding brush of the series, and means for conveying the cleaned waste from the last of the series of brushes, to the carding-machine.

16. The combination with a carding-machine and a feeder comprising a hopper, of a conveyor located below the machine to receive the waste and to carry it to the feed end of

the machine, a series of cleaning-brushes disposed to receive the waste from the conveyer, and an elevator disposed to convey the waste from the cleaning-brushes to the hopper and
5 from the hopper to the carding-machine.

17. The combination with a carding-machine, of an endless conveyer located beneath the same to catch the waste falling therefrom and to return the same to the feed end of the
10 machine, a vibrating device located on each side of and slightly above the conveyer and supported by the machine-frame to bank the waste toward the middle of the conveyer to

prevent its escape therefrom, means for operating the conveyer, and means for operating
15 the vibrating device directly from the machine.

In testimony that we claim the foregoing as our own we have hereto affixed our signatures in the presence of two witnesses.

GEORGE W. TAYLOR.
JAMES W. SCOTT.

Witnesses:

THOS. H. DONOHUE,
ARTHUR S. KITTLEFIELD.