M. ROTH.

COMBING MACHINE.

APPLICATION FILED JUNE 1, 1907.

905,233.

Patented Dec. 1, 1908.

3 SHEETS—SHEET 1.

Fig. 1.

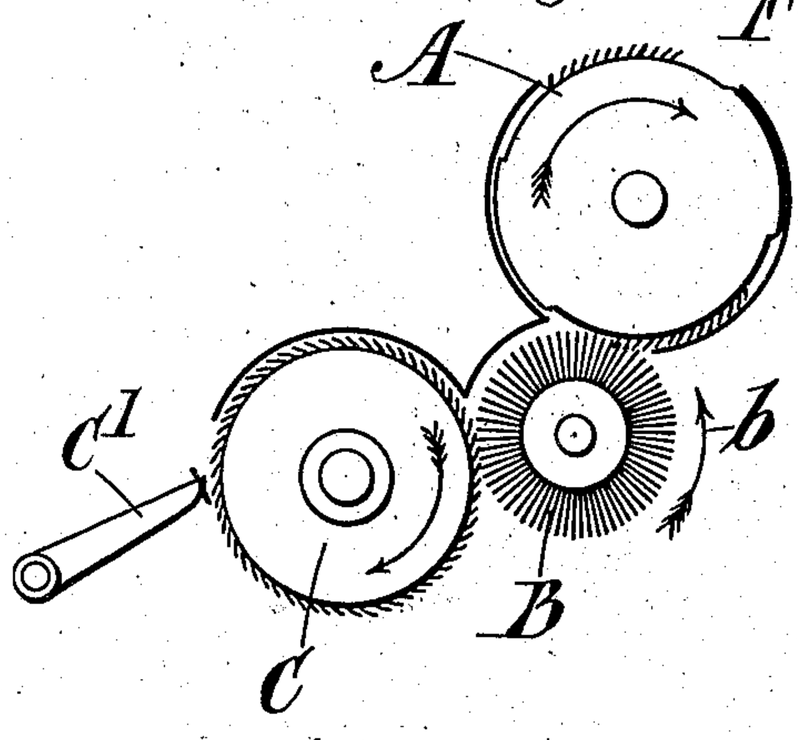
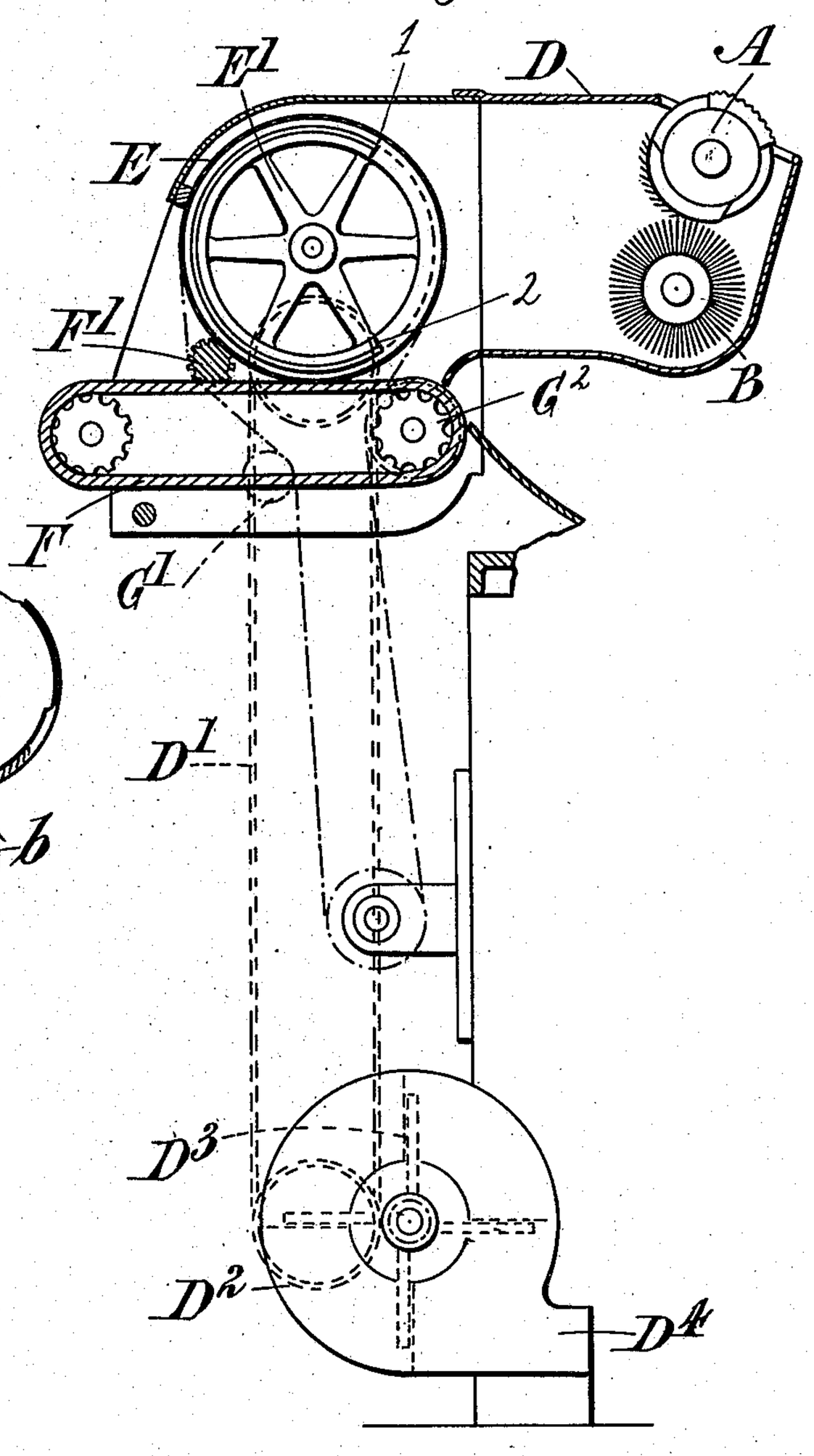


Fig. 2



Witnesses
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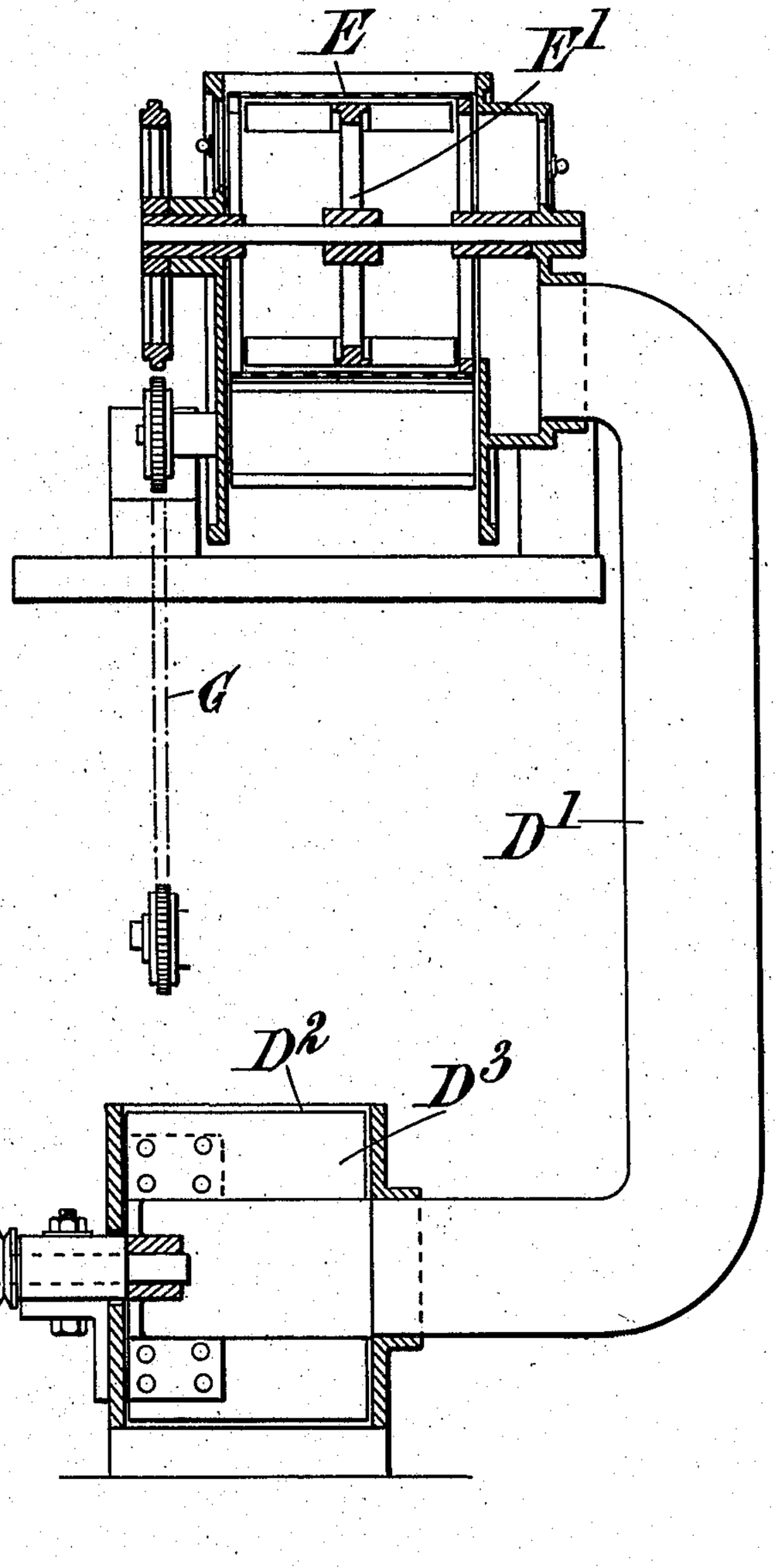
3 SHEETS—SHEET 2.

Fig. 3.



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3 SHEETS—SHEET 3.

Fig. 5.

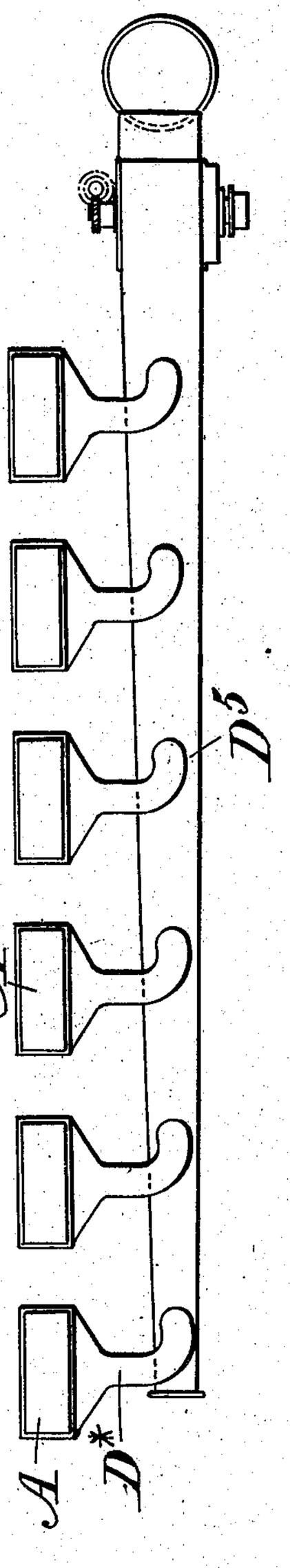


Fig. 4.

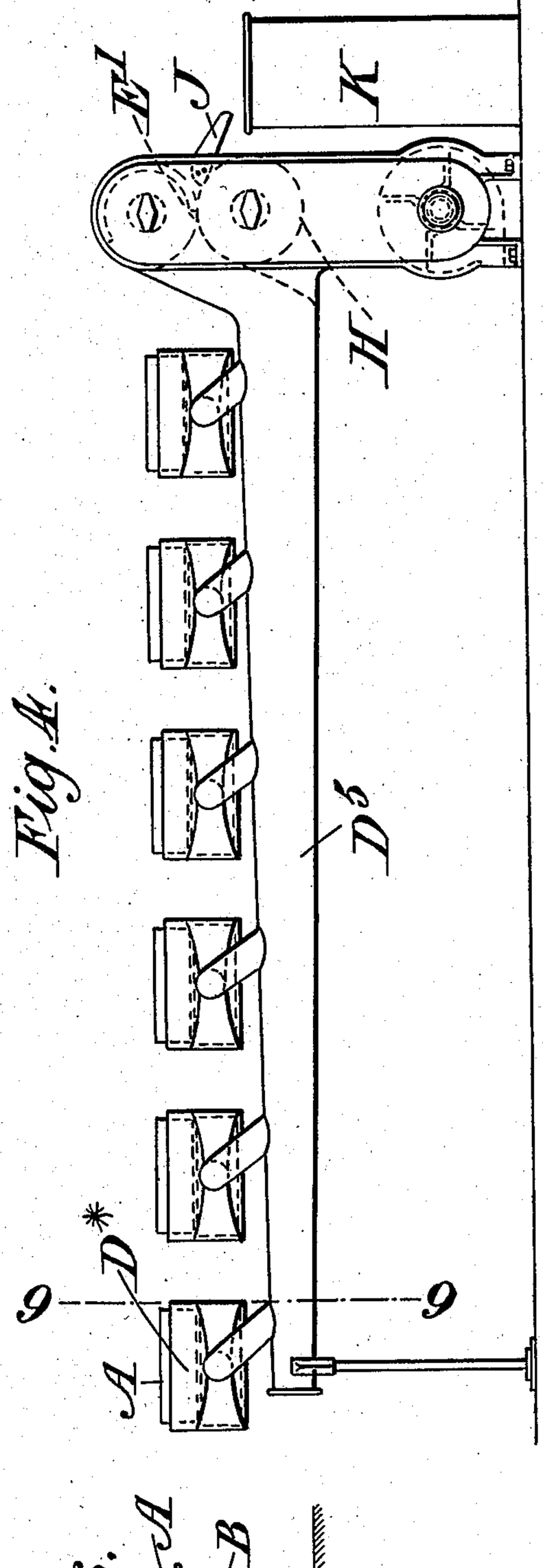
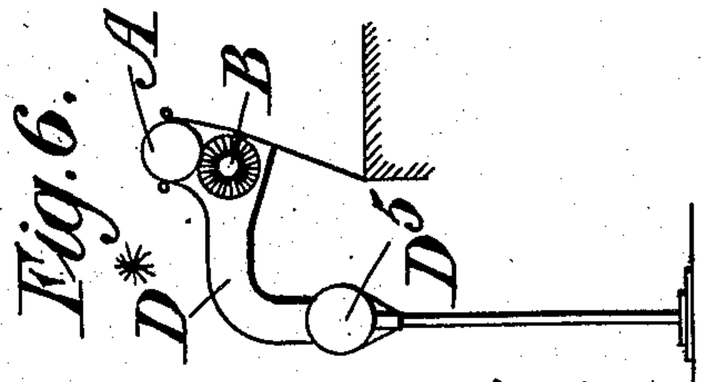


Fig. 6.



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UNITED STATES PATENT OFFICE.

MARTIN ROTH, OF LILLE, FRANCE.

COMBING-MACHINE.

No. 905,233. Specification of Letters Patent. Patented Dec. 1, 1908.

Application filed June 1, 1907. Serial No. 376,838.

To all whom it may concern:

Be it known that I, MARTIN ROTH, a citizen of the French Republic, residing at Lille, France, have invented certain new and useful Improvements in Combing-Machines, of which the following is a specification.

This invention is for improvements in or relating to combing machines and has for its object to provide means whereby the waste taken from the sliver may be collected.

In machines as at present constructed the waste is removed from the combing cylinder by means of a brush and from this the waste is taken by a doffer. A stripping comb bears against the doffer and finally discharges the waste therefrom into any suitable receptacle. During the transfer of the waste from the brush to the doffer the waste becomes "nappy" which is detrimental to its value as a commercial article. Moreover the operation of the doffer is very unsatisfactory as it only removes the waste from the surface of the brush and as the waste is finely divided it is carried about by air currents so that the machine becomes clogged thereby rendering constant cleaning necessary. To obviate these defects the doffer and stripping comb are according to this invention dispensed with and the brush, and preferably part of the combing cylinder, are inclosed in a casing through which a current of air is forced. Any convenient means may be employed for producing the forced draft such as a fan operating to suck air into or to blow air through the casing. In conjunction with the forced draft apparatus a perforated screen is employed so that as the air passes through this screen the waste carried by it is arrested. The pressure of the air collects the waste on to the screen and more or less consolidates it. Other apparatus may be provided for removing this waste and submitting it to pressure so that it is finally delivered in the form of a fleece or sliver.

Conveniently the filtering screen takes the form of a perforated drum, the interior of which communicates with the draft creating apparatus so that the current of air induced through the casing inclosing the brush passes from the exterior to the interior of the drum. Within the drum is fixed a shield whereby part of the drum is rendered inoperative as a screening device. The drum is constantly rotated by suitable means and as the waste collected thereon comes opposite the shield where the screen is inoperative, the waste no longer adheres to the screen as there is no passage for the air through this portion. A traveling band or roller bears against the screen at a point in proximity to that at which the waste is released so that the waste passes between the band and drum which thus coöperate as a pair of rollers and consolidate the waste into a fleece or sliver.

In the accompanying drawings: Figure 1 shows diagrammatically in elevation that part of a combing machine to which the present invention applies but arranged according to the usual practice. Fig. 2 is a similar view to Fig. 1 showing the apparatus arranged according to the present invention. Fig. 3 is a rear elevation of the parts shown in Fig. 2 in part section. Fig. 4 shows diagrammatically the arrangement of the parts according to this invention as applied to a machine having six heads. Fig. 5 is a plan of the apparatus shown in Fig. 4, and Fig. 6 is a side elevation in part section on the line 6—6 of Fig. 4.

Like letters indicate like parts throughout the drawings.

Referring first to Fig. 1 which shows the apparatus as arranged according to present methods:—The combing cylinder is shown at A and rotates in the direction indicated by the arrow. In contact with this cylinder is a brush B which rotates in the direction of the arrow *b* and at a higher speed than the cylinder so that it removes the waste therefrom, and a doffer C bears against the brush and rotates in the direction indicated by its arrow at a higher speed than the brush for the purpose of transferring the waste from the brush to itself. Against the doffer a stripping comb C^1 bears so that the waste collected by the doffer is removed and discharged into any suitable receptacle. It is in the transfer of the waste from B to C and again from C to C^1 that the napping referred to occurs. In Fig. 2 which shows the apparatus as arranged to avoid this napping the arrangement of the combing cylinder A and brush B remains as before but the brush is inclosed by a casing D which also extends partly round the combing cylinder A. Within the casing at a suitable distance from the brush a cylindrical perforated screen or drum E is mounted and the interior of this drum communicates with one end of a conduit D^1,

whose other end communicates with a casing D^2 wherein is mounted a forced draft apparatus indicated by a fan D^3. The forced draft apparatus D^3 creates a current of air which travels from the brush B through the drum E and thence by the conduit D^1 to the casing D^2 whence it issues by an exit D^4. This forced draft takes or draws off the waste from the brush B and carries it towards the drum E which acts as a screening device as the perforations in the drum, although allowing the passage of the air are too small to allow the passage of the waste. The waste is thus arrested and collects on the surface of the drum. Within the drum is mounted a fixed shield E^1 which covers about two-thirds of the interior of the drum while the other third extending between the points marked 1 and 2 and which lies on that side against which the forced draft impinges has no interior shield. It follows therefore that the shielded portion of the drum is rendered inoperative as a screening device and the waste collects only on the part lying between the points 1 and 2. As however, the drum rotates the waste which is pressed by the air current against the operative portion of the screening drum, and so adheres thereto is carried round to the inoperative portion of the drum, that is, it is brought round to that part occupied by the shield E^1. The air pressure therefore which maintained the waste against the drum and partly consolidated it is now no longer operative owing to the shield E^1 preventing the passage of air through this part, so that the waste falls away from the screen or drum. Beneath the screen is a traveling band F which bears against the latter so that before the waste is finally delivered from the screen it is compressed between the screen and band whereby the consolidating is completed and the waste is delivered in the form of a fleece or sliver. A fluted roller F^1 is situated to the rear of the point of contact between the traveling band and screen and bears against both of these members for the purpose of removing any waste which may still adhere to the screen.

It is obvious that any suitable mechanism may be employed for rotating the screen the band and the roller, a belt G being indicated for this purpose. The belt is carried over an idle pulley G^1 round a portion of the roller F^1 thence over a suitable portion of the drum E and on its return bears against the roller G^2 whereon one end of the traveling band F is carried so that all these parts are rotated by the one belt.

In many combing machines six heads are employed, each of which has a combing cylinder and brush similar to those shown in Figs. 2 and 3, and for the purpose of this invention each brush is provided with a separate casing D; the various casings however all communicating with the single conduit D^5 as shown in Figs. 4 and 5. In these figures the cylinders A only are visible, but in Fig. 6 the combing cylinder and brush are both illustrated. Instead of the traveling band F obviously a roller such as that indicated at H (Fig. 4) may be employed for the purpose of compressing and finally consolidating the waste collected on the screen E^1 and the fleece or sliver thus formed may be discharged by a chute J into a receptacle K.

What I claim as my invention and desire to secure by Letters Patent is:—

1. In a combing machine the combination of, a combing member, a stripping member coöperating therewith to remove the waste therefrom, a casing inclosing those parts of the combing and stripping members which are in contact with each other, means for creating a forced draft through the casing in a direction to take off the waste from these members, a perforated screen situated within the casing at a point between the stripping member and the exit of the casing so that the waste is arrested by this screen and consolidated by the air pressure with which it is driven against the same, means for removing the waste thus collected, and means for subjecting the collected waste to pressure whereby it is formed with a fleece or sliver.

2. In a combing machine the combination of, a combing member, a stripping member coöperating therewith to remove the waste therefrom, a casing inclosing those parts of the combing and stripping members which are in contact with each other, means for creating a forced draft through the casing in a direction to take off the waste from these members and a traveling perforated screen situated within the casing at a point between the stripping member and the exit of the casing with means for freeing the waste arrested from the action of the forced draft, when it has traveled a predetermined distance on the filtering screen.

3. In a combing machine the combination of, a combing member, a stripping member coöperating therewith to remove the waste therefrom, a casing inclosing those parts of the combing and stripping members which are in contact with each other, means for creating a forced draft through the casing in a direction to take off the waste from these members, a traveling perforated screen situated within the casing at a point between the stripping member and the exit of the casing and moving in such manner as to carry the waste arrested to a point out of the range of the forced draft, and a stationary shield on that side of the screen to which the draft passes and covering a portion of the screen so that the draft cannot pass

through the screen at this point and consequently the waste is released therefrom.

4. In a combing machine the combination of, a combing member, a stripping member coöperating therewith to remove the waste therefrom, a casing inclosing those parts of the combing and stripping members which are in contact with each other, means for creating a forced draft through the casing in a direction to take off the waste from these members, a traveling perforated screen situated within the casing at a point between the stripping member and the exit of the casing and moving in such manner as to feed the waste arrested to a point out of the range of the forced draft, and means for subjecting the waste to pressure after it has been brought out of the range of the forced draft.

5. In a combing machine the combination of, a combing member, a stripping member coöperating therewith to remove the waste therefrom, a casing inclosing those parts of the combing and stripping members which are in contact with each other, means for creating a forced draft through the casing in a direction to take off the waste from these members, a traveling perforated screen situated within the casing at a point between the stripping member and the exit of the casing and moving in such manner as to carry the waste arrested to a point out of the range of the forced draft so that the waste falls from the screen, and a traveling member which bears against the screen and applies pressure to the waste as it leaves the latter.

6. In a combing machine the combination of, a combing member, a stripping member coöperating therewith to remove the waste therefrom, a casing inclosing those parts of the combing and stripping members which are in contact with each other, means for creating a forced draft through the casing in a direction to take off the waste from these members, a traveling perforated screen situated within the casing at a point between the stripping member and the exit of the casing, means for freeing the waste arrested from the action of the forced draft when it has traveled a predetermined distance on the filtering screen, and means for subjecting it to pressure for the purpose of consolidating it.

7. In a combing machine the combination of, a combing member, a stripping member coöperating therewith to remove the waste therefrom, a casing inclosing those parts of the combing and stripping members which are in contact with each other, means for creating a forced draft through the casing in a direction to take off the waste from these members, a perforated drum disposed transversely to the direction of the forced draft and situated within the casing at a point between the stripping member and the exit of the casing so that it arrests the waste carried along by the forced draft, means for rotating this drum, a traveling member made to bear against the drum at the point where the waste is to be delivered therefrom, and means for releasing the waste at this point from the drum substantially as set forth.

8. In a combing machine the combination of, a combing member, a stripping member coöperating therewith to remove the waste therefrom, a casing inclosing those parts of the combing and stripping members which are in contact with each other, means for creating a forced draft through the casing in a direction to take off the waste from these members, a perforated drum disposed transversely to the direction of the forced draft and situated within the casing at a point between the stripping member and the exit of the casing so that it arrests the waste carried along by the forced draft, means for rotating this drum, and a stationary shield within the drum whereby the passage of air through the drum is prevented at that point where the waste is to be delivered so that the latter is automatically released from the surface of the drum, substantially as set forth.

9. In a combing machine the combination of, a combing member, a stripping member coöperating therewith to remove the waste therefrom, a casing inclosing those parts of the combing and stripping members which are in contact with each other, means for creating a forced draft through the casing in a direction to take off the waste from these members, a perforated drum disposed transversely to the direction of the forced draft and situated within the casing at a point between the stripping member and the exit of the casing so that it arrests the waste carried along by the forced draft, means for rotating this drum, means for closing the end of the drum a conduit connecting the interior of the drum with the exit of the casing, and means for rotating the drum so that the waste arrested by it is carried round to a point of delivery, substantially as set forth.

10. In a combing machine the combination of, a combing member, a stripping member coöperating therewith to remove the waste therefrom, a casing inclosing those parts of the combing and stripping members which are in contact with each other, means for creating a forced draft through the casing in a direction to take off the waste from these members, a perforated drum disposed transversely to the direction of the forced draft and situated within the casing at a point between the stripping member and the exit of the casing so that it arrests the waste carried along by the forced draft, means for rotating this drum, means for closing the end of the drum a conduit connecting the interior of the drum with the exit of the casing, means for rotating the drum so that the

waste arrested by it is carried round to a point of delivery, a fixed shield within the drum whereby the forced draft is prevented from passing through the same as it travels past the shield so that the waste is thus automatically freed from the drum, substantially as set forth.

11. In a combing machine the combination of, a combing member a stripping member coöperating therewith to remove the waste therefrom, a casing inclosing those parts of the combing and stripping members which are in contact with each other, means for creating a forced draft through the casing in a direction to take off the waste from these members, a perforated drum disposed transversely to the direction of the forced draft and situated within the casing at a point between the stripping member and the exit of the casing so that it arrests the waste carried along by the forced draft, means for rotating this drum, means for closing the end of the drum a conduit connecting the interior of the drum with the exit of the casing, means for rotating the drum so that the waste arrested by it is carried round to a point of delivery, a fixed shield within the drum whereby the forced draft is prevented from passing through the same as it traverses past the shield so that the waste is thus automatically freed from the drum, and a traveling member which bears against the drum opposite that part where the shield is situated and applies pressure to the waste as it is delivered from the drum substantially as set forth.

12. In a combing machine the combination of, a plurality of combing members, a plurality of stripping members coöperating therewith to remove the waste therefrom, a plurality of casings, one casing being allotted to each combing member and inclosing those parts of the combing member and cooperating stripping member which are in contact with each other, means for producing a forced draft through all of the casings in a direction to take off the waste from the combing and stripping members, a conduit common to all of the casings and into which the same discharge, and means for consolidating the waste taken off and discharged into the conduit, substantially as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

MARTIN ROTH.

Witnesses:
EMILE LE BLAU, Fils.
JULIEN LE BLAU.