

No. 777,703.

PATENTED DEC. 20, 1904.

S. W. TRAYLOR.
SCREEN.

APPLICATION FILED JUNE 13, 1904.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1.

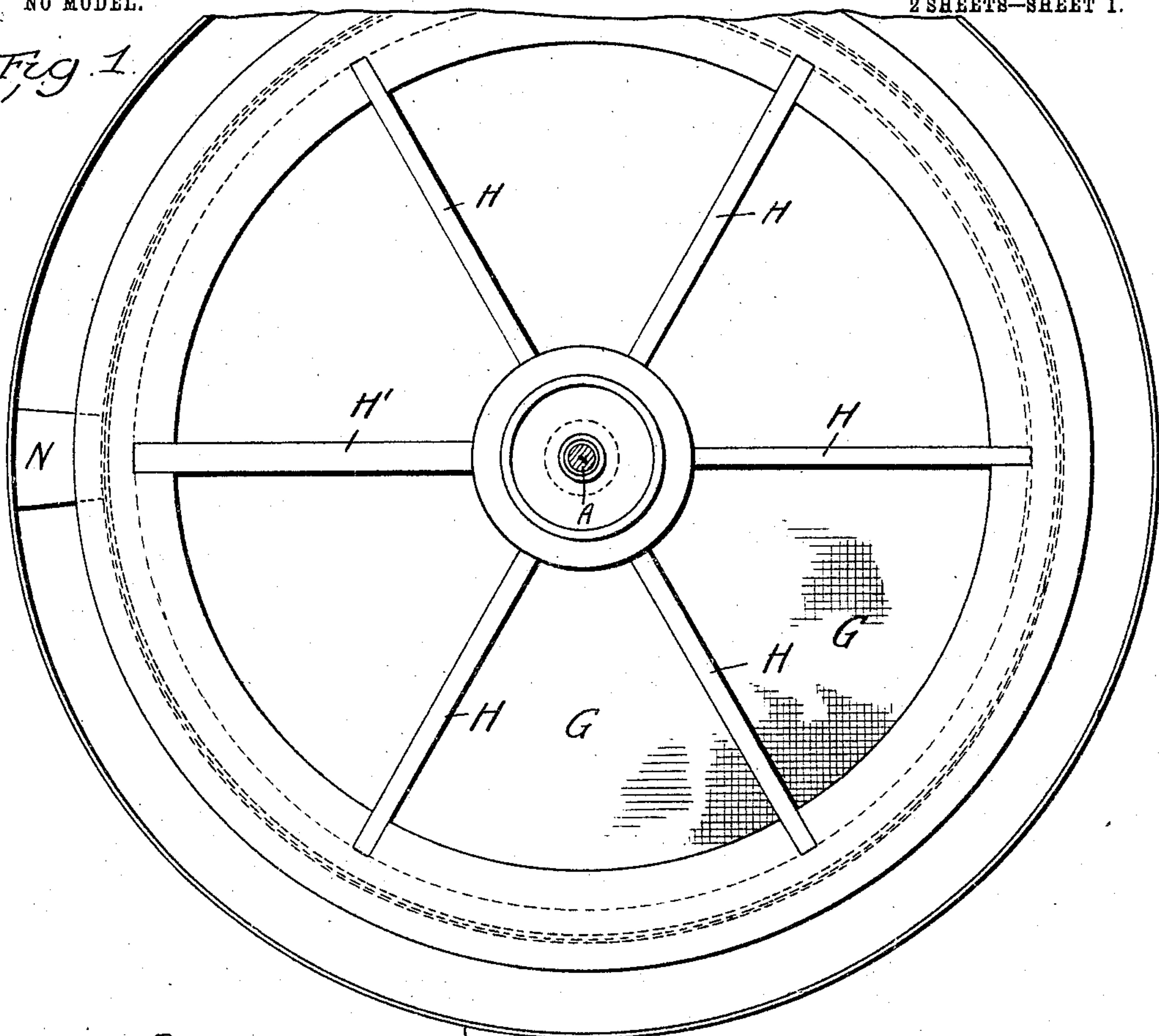
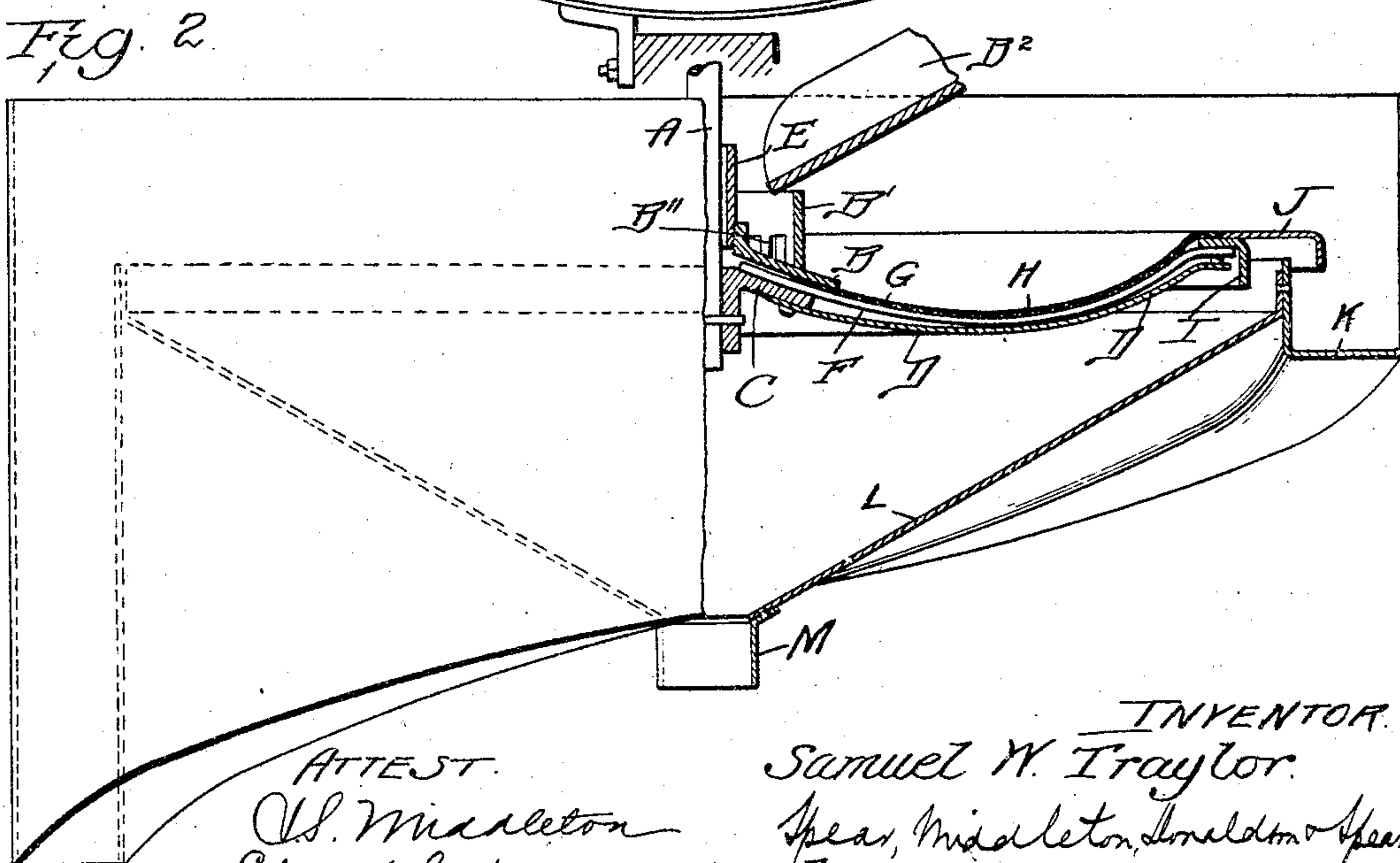


Fig. 2.



ATTEST.
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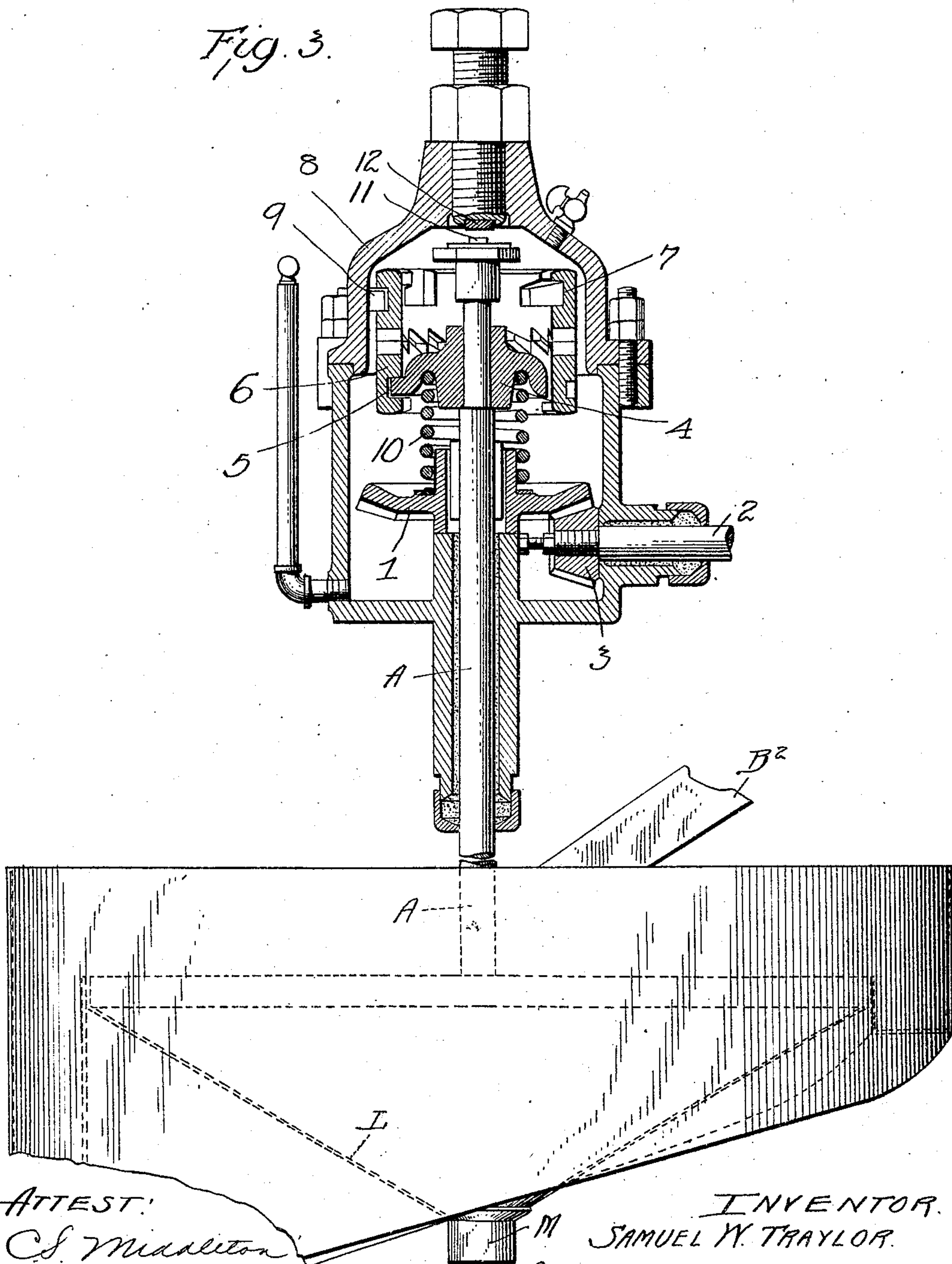
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2 SHEETS—SHEET 2.

Fig. 3.



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UNITED STATES PATENT OFFICE.

SAMUEL W. TRAYLOR, OF NEW YORK, N. Y.

SCREEN.

SPECIFICATION forming part of Letters Patent No. 777,703, dated December 20, 1904.

Application filed June 13, 1904. Serial No. 212,413.

To all whom it may concern:

Be it known that I, SAMUEL W. TRAYLOR, a citizen of the United States, residing at New York city, State of New York, have invented certain new and useful Improvements in Screens, of which the following is a specification.

My invention relates to screens, or more particularly to the general form of screen disclosed in application for Letters Patent of the United States filed by me February 12, 1904, Serial No. 193,241.

My present invention concerns more especially a screen for use with wet material, which ordinarily is liable to clog the meshes of the screen-cloth, to avoid which I have provided special means associated with the screen, as will be hereinafter described.

The invention consists in the features, combination, and arrangement of parts hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a plan view of the screen; and Fig. 2 is a part side elevation and part sectional view through the screen proper, showing only so much of the apparatus as is necessary for a clear understanding of my invention. Fig. 3 is a vertical sectional view of the means for rotating a vibrating screen, with its pan.

In the drawings, A is a shaft arranged vertically and connected with suitable head-gear, such as is shown in the above-mentioned application, designed to give to the said shaft and the screen carried thereby a vertical vibratory movement. The shaft is driven in a manner similar to that described in said application or in any other suitable way, and it has secured thereto the screen, as will hereinafter be described. Surrounding the shaft is a feed-plate B, which is of substantially conical formation, providing a sloping or inclined wall at the center of the screen, the said feed-plate also having an upwardly-extending flange B', which may be provided with openings B'', through which some of the material may pass outwardly onto the screen, the balance flowing over the top of the flange B', the said material being fed onto the feed-plate in the space inclosed by the flange B' by means

of a suitable chute B². The purpose of this feed-plate being provided with a flange B' with openings B'' is to protect the screen from the force of the material in flowing from the launder B² onto the screen and cause the material to flow evenly and without splashing onto the screen-surface. If this flow were not impeded, excessive wear on the screening-surface and imperfect screening would result.

E is a short piece of pipe screwed into the feed-plate B and surrounding the shaft A, so as to protect the shaft from attrition by the material which is discharged onto the feed-plate.

The screen-cloth is indicated at G, being held in place by bars H extending over the screen, which bars are suitably attached to radiating arms F, which are attached at their inner ends to the hub C of the screen, which is fixed to the lower end of the shaft A. Immediately below the arms F a pan D is located, so as to be close to the screen-cloth, the said pan being attached at its inner edge to the screen-hub and at its outer edge to the arms F, leaving a small space between the said pan and the screen-cloth for the passage outwardly of the material and water which has passed through the screen-cloth. The water and fine product having passed through the screen is discharged over the outer edge of the pan against an angle-iron I, which is attached to the outer ends of the radiating arms F and encircles the outer edge of the screen. The said angle-iron has one flange depending in the form of an apron across or in front of the annular opening existing between the outer edge of the pan and the outer edge of the screen. The screened product and water discharges against the depending flange of the angle-iron, which thereby acts as a stop against the further outward passage of the product and water, which are thence directed downward into a hopper L. A launder K, forming part of the stationary casing, surrounds the screen and is attached to the hopper L. An apron J extends outwardly from the angle-iron I, bridging the space between the screen and the launder K, and over this apron the oversized or coarse product from the screen is delivered into the launder.

It will be noticed that the dish or pan D is fixed to the screen to rotate therewith and is arranged close to the lower side of the screen, and the product passing through the openings of the screen into the dish with the water is carried out to the outer edge and discharged against the apron I and thence into the hopper. Being close to the screen, the pan or dish produces a lubricating or irrigating effect, as the water and fine material after passing through the screen uniformly fills the space between the screen and the dish, thus subjecting the entire surface of the screen to the lubricating or clearing action due to the revolution of the parts. It will further be understood that as the screen, together with the plate or pan, are vibrated vertically and the fine product and water lie in a comparatively thin film or layer between the pan and the screen the vibrating motion will tend to cause this comparatively thin layer of material to act in a jet-like manner upon the screen-cloth, causing the same to be lubricated and preventing the clogging of the meshes or openings in the screening-surface, which has heretofore been the greatest difficulty in wet screening.

As before stated, the head-gear for rotating and vibrating the screen is substantially the same as that described in the application above mentioned. Briefly stated, it consists of a gear 1, splined to the shaft of the screen and driven from a shaft 2 through the gear 3. The shaft has a block 4 fixed thereon, which block carries a lug 5, engaging a cam-ring 6, said cam-ring having teeth engaging the teeth of a second cam-ring 7, which latter is held to the casing 8 of the head by a lug 9. The cam-ring 6 rotates with the shaft, and the teeth on the cam-rings force the shaft downwardly against the tension of a spring 10, pressing the block 4 upwardly. The upward movement of the shaft after the high parts of the cam-teeth pass each other is due to the action of the spring 10, and this upward movement is arrested by impact resulting from the impact-piece 11 striking the pad or impact-block 12, suitably held in the casing.

As above stated, the pan, which it will be noticed is imperforate, is arranged to rotate with the screen, and the action of centrifugal force on the water and material which passes through the screen into the space between it and the pan will cause the said water and material to assume a shape conforming to that of the pan, and thus a fine film of water and the fine material contained therein will be formed on the pan, conforming in shape to the screen, and the vibration resulting from

the upward impact will cause this sensitive thin film to be projected up in the form of jets or waves, and this will serve to free the screen and prevent clogging of its meshes.

I claim as my invention—

1. In combination with a concave screen, rotating about a vertical axis, means for giving it a vertical vibratory movement, a pan of approximately the same degree of concavity as that of the screen, and arranged clear below the lower side of the screen with a small crevice between said pan rotating with the screen and both the pan and the screen discharging over their outer edges by centrifugal force, substantially as described.

2. A screening apparatus of the rotary type comprising in combination a screen having a concave upper surface, means for rotating the screen, a pan of concave form conforming to the shape of the screen, said pan rotating with the screen, means for feeding the material to the central portion of the screen, and means for subjecting the screen with the pan while in rotation to a vertical vibration, and arresting by impact only the upward movement of the said screen and pan, the material being distributed over the screen from the center to the periphery by the centrifugal force aided by the upward impact, substantially as described.

3. In combination with a rotary screen, a plate or pan arranged closely beneath the same conforming in shape thereto and rotating therewith, and with a small space between for the passage of the fine product outwardly under centrifugal force, and an apron depending over the annular space between the plate and screen to deflect the discharge downwardly, and means for vibrating the screen and pan vertically, substantially as described.

4. In combination, with a rotary screen, a pan or plate arranged beneath the same and close thereto to cause the fine material and water after passing through the screen to react thereon, a launder surrounding the screen, an apron extending from the screen to the launder, and an apron depending across the annular space between the screen and plate, and against which the material is discharged, and a hopper for receiving the said material, the said pan rotating with the screen and discharging over its outer edge by centrifugal force, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

SAMUEL W. TRAYLOR.

Witnesses:

P. E. VAN SANN,
R. H. VAIL.