

No. 709,184.

Patented Sept. 16, 1902.

J. C. TALIAFERRO & C. M. REYNARD.

TIN PLATE CLEANING MACHINE.

(Application filed Nov. 29, 1901.)

(No Model.)

4 Sheets—Sheet 1.

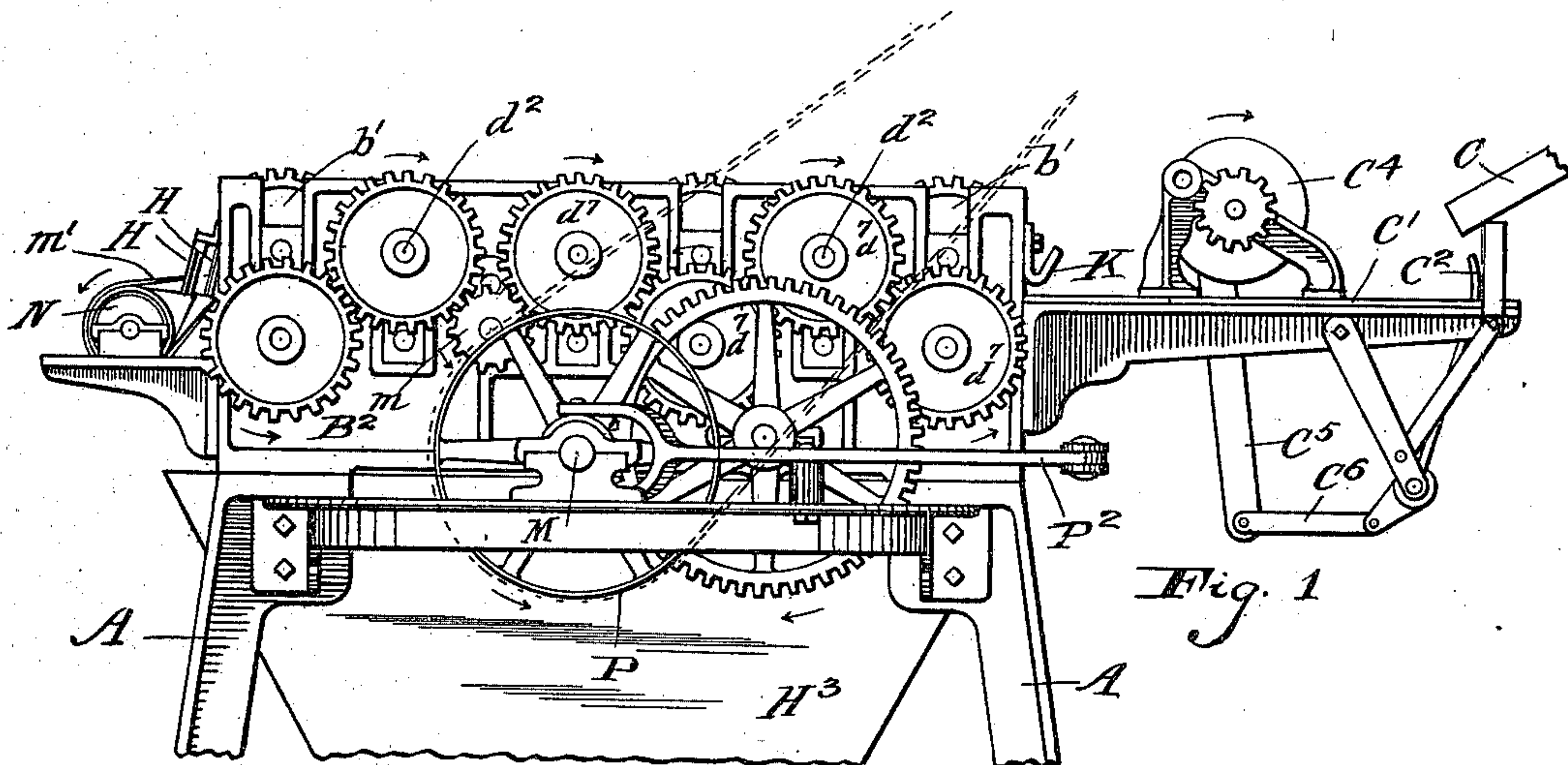


Fig. 1

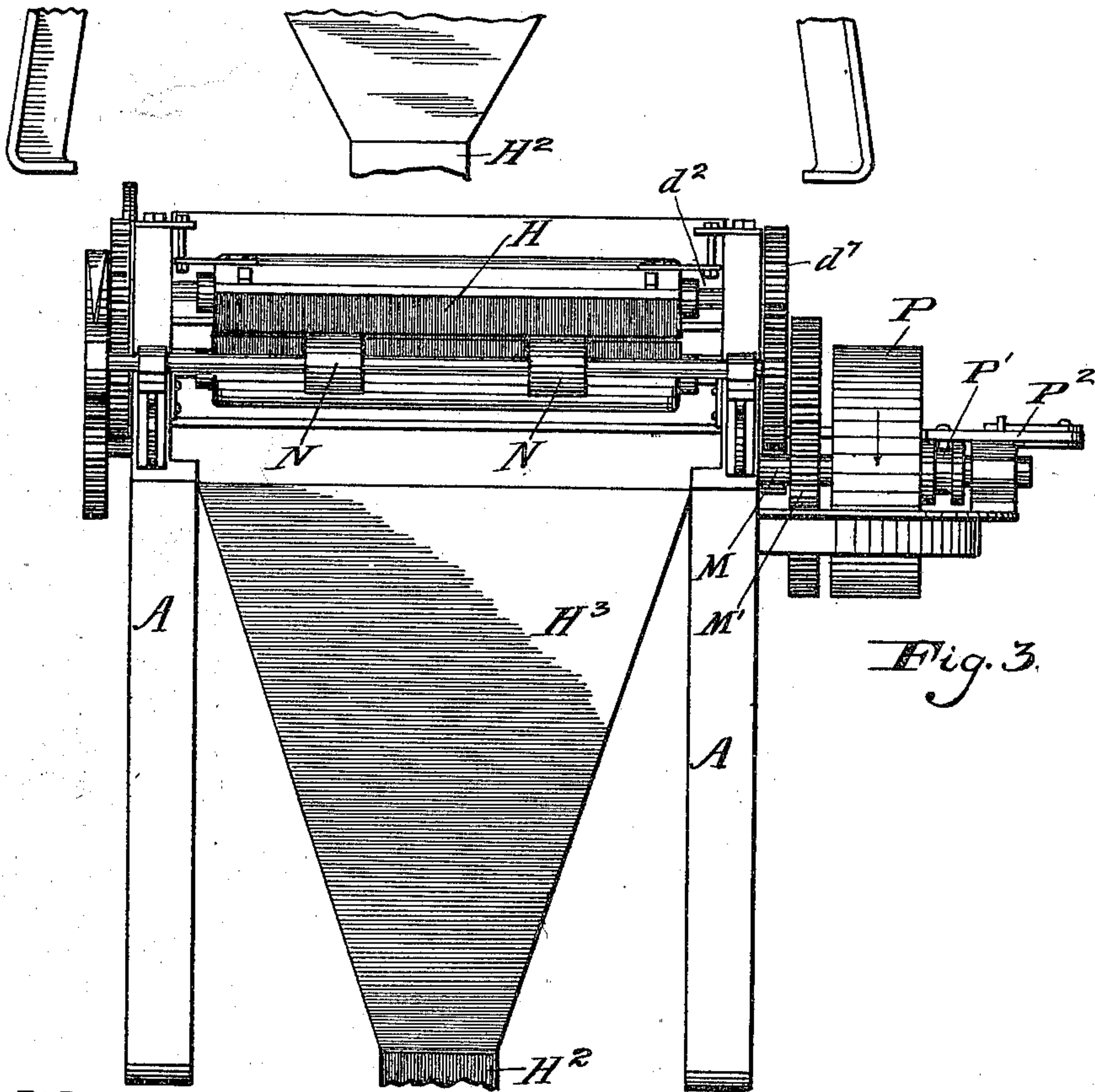


Fig. 3

Witnesses.

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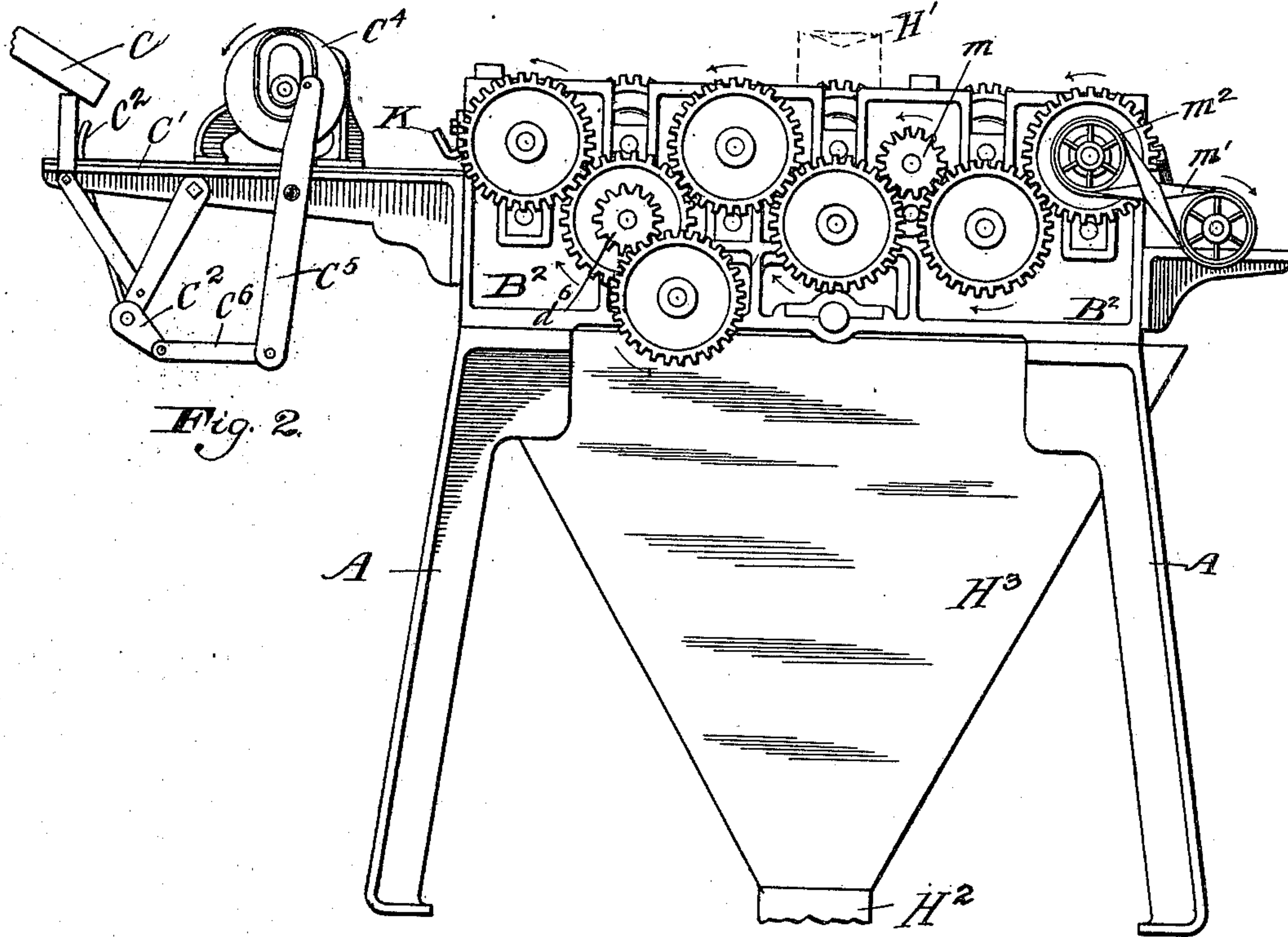


Fig. 2.

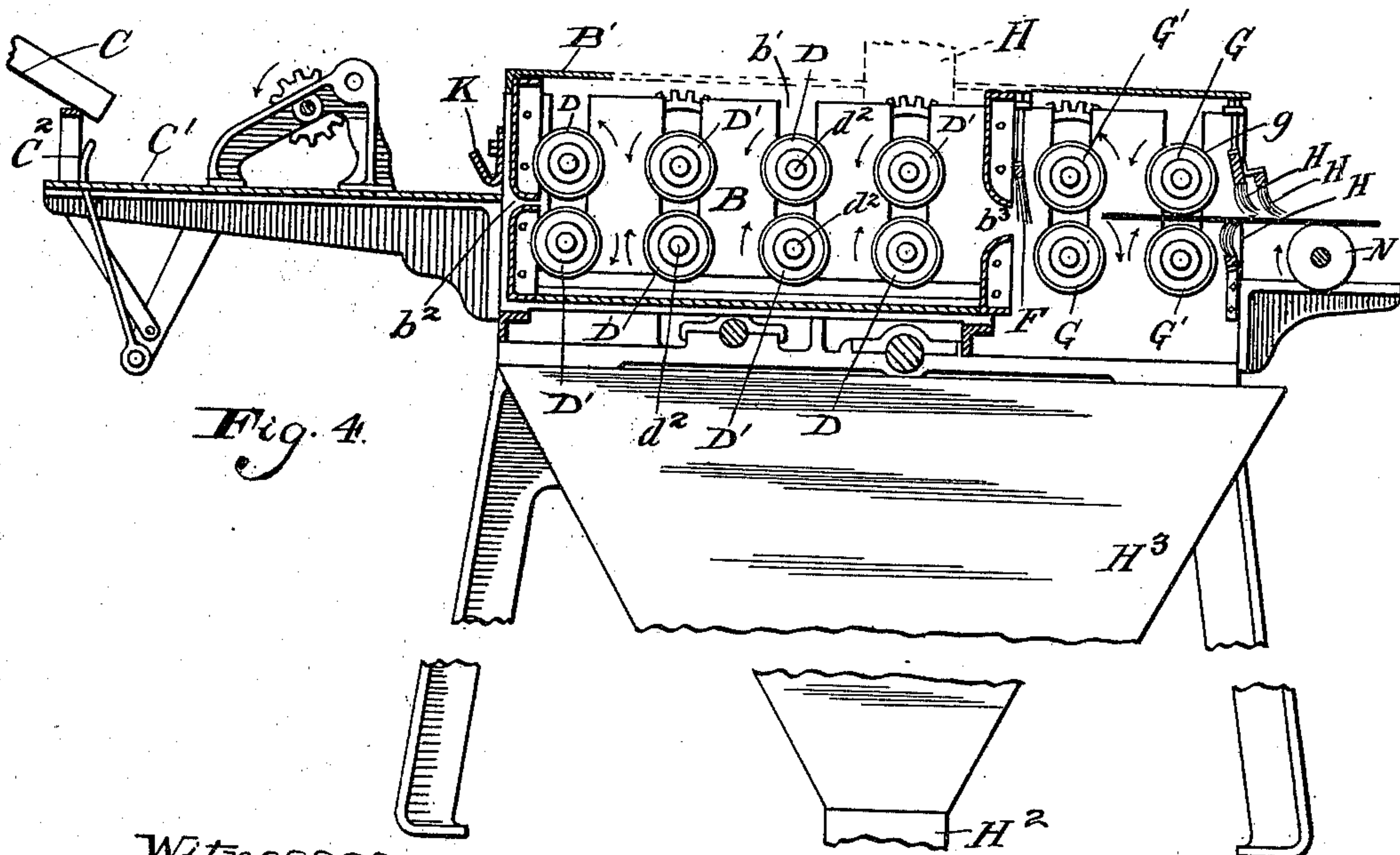


Fig. 4.

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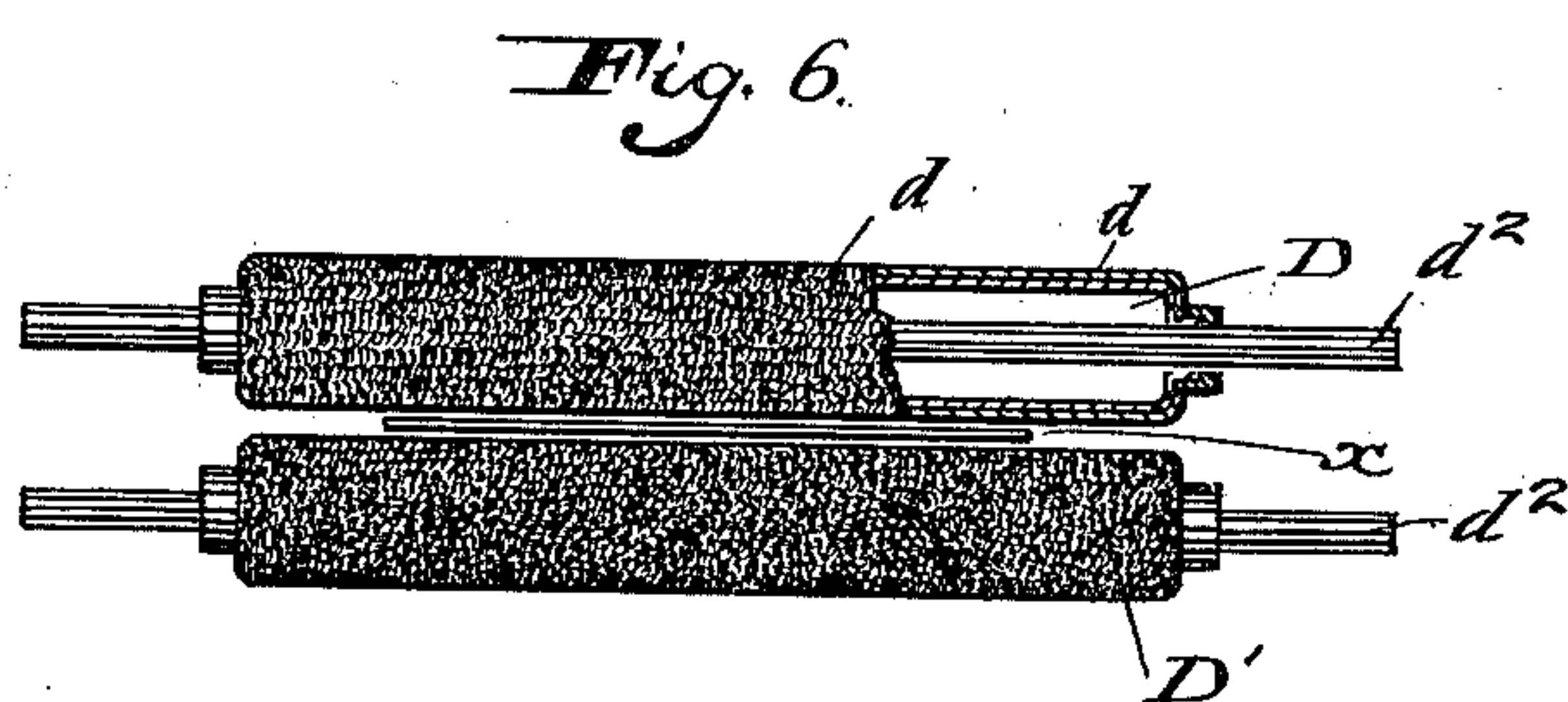
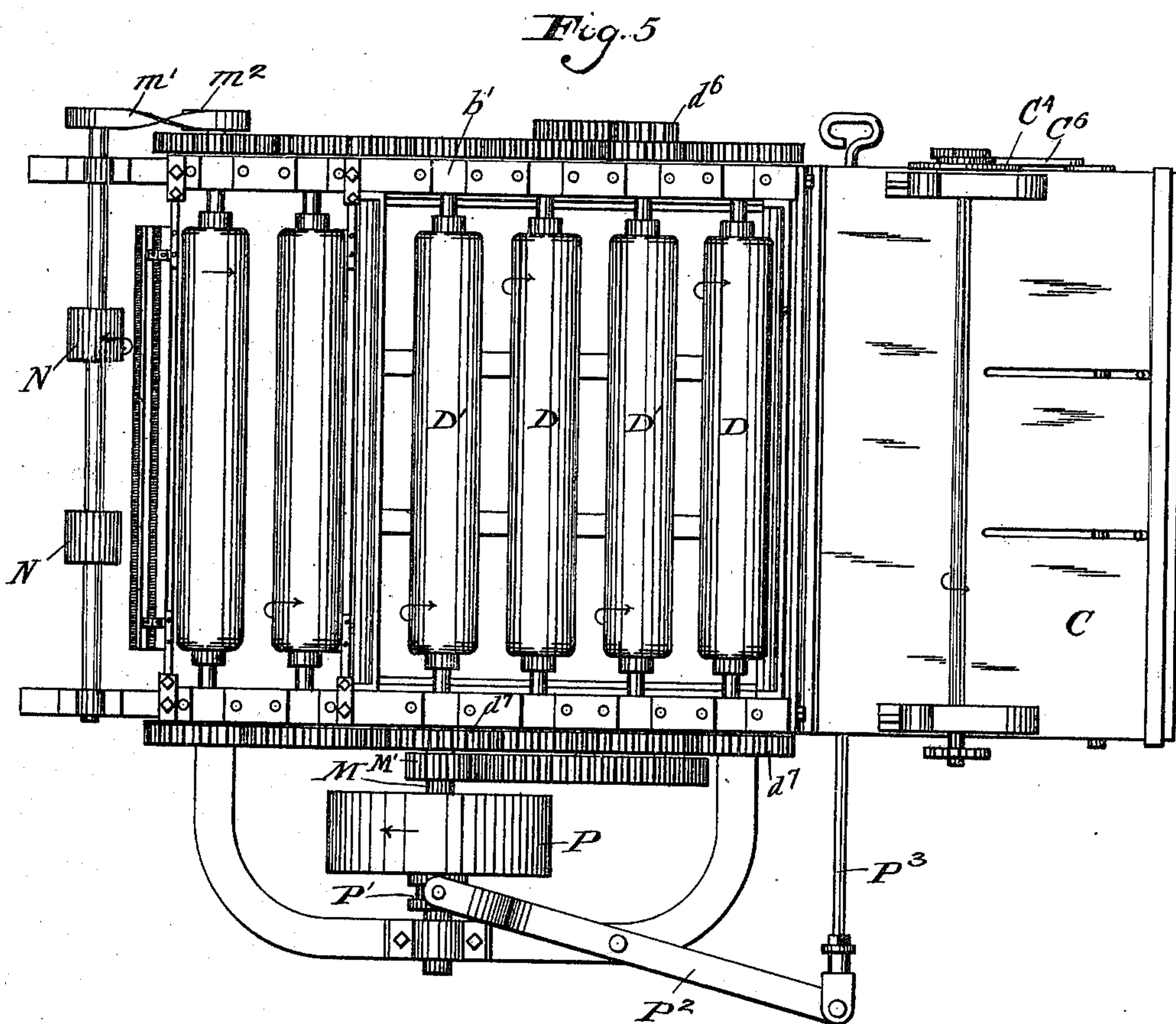
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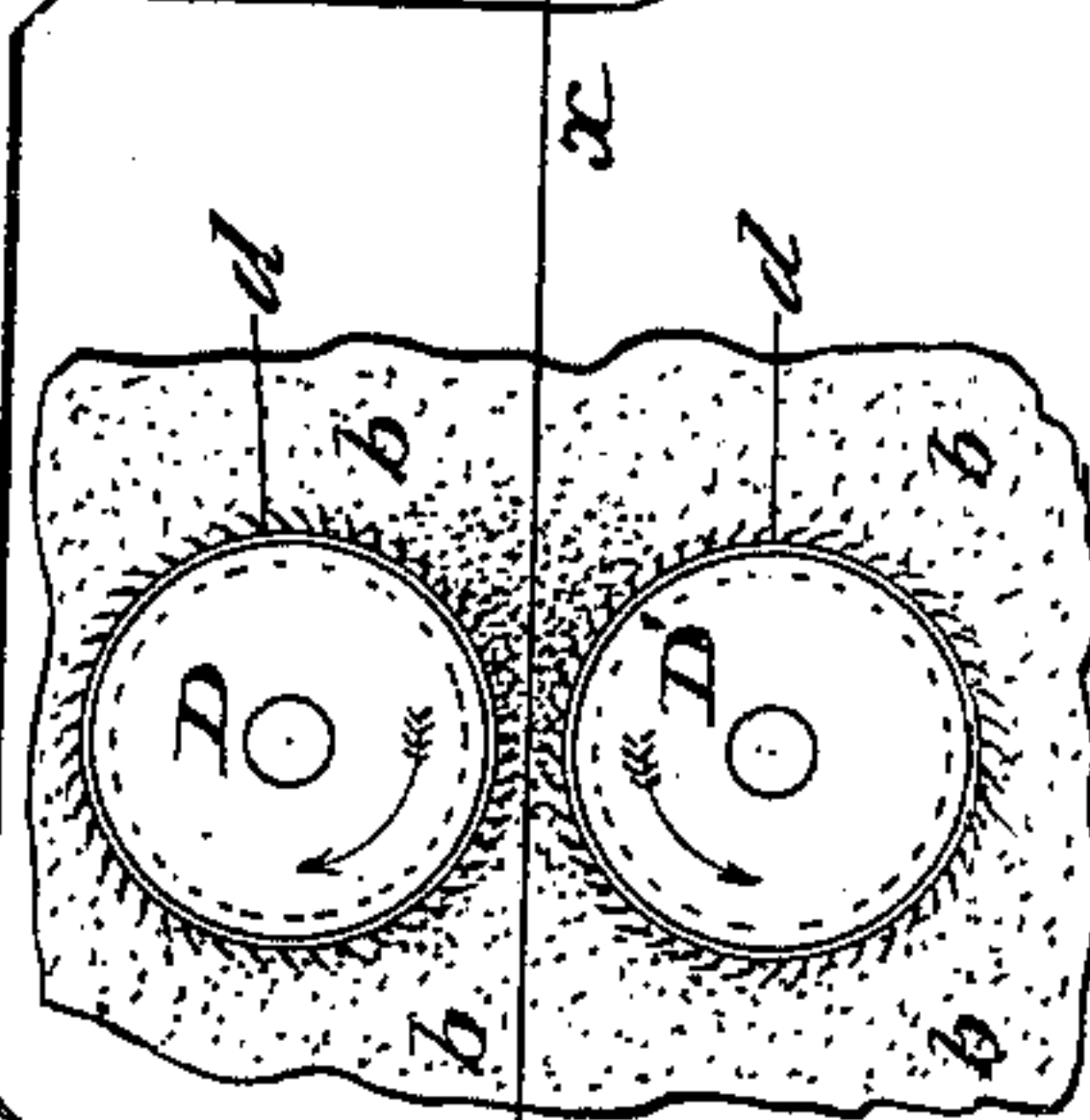
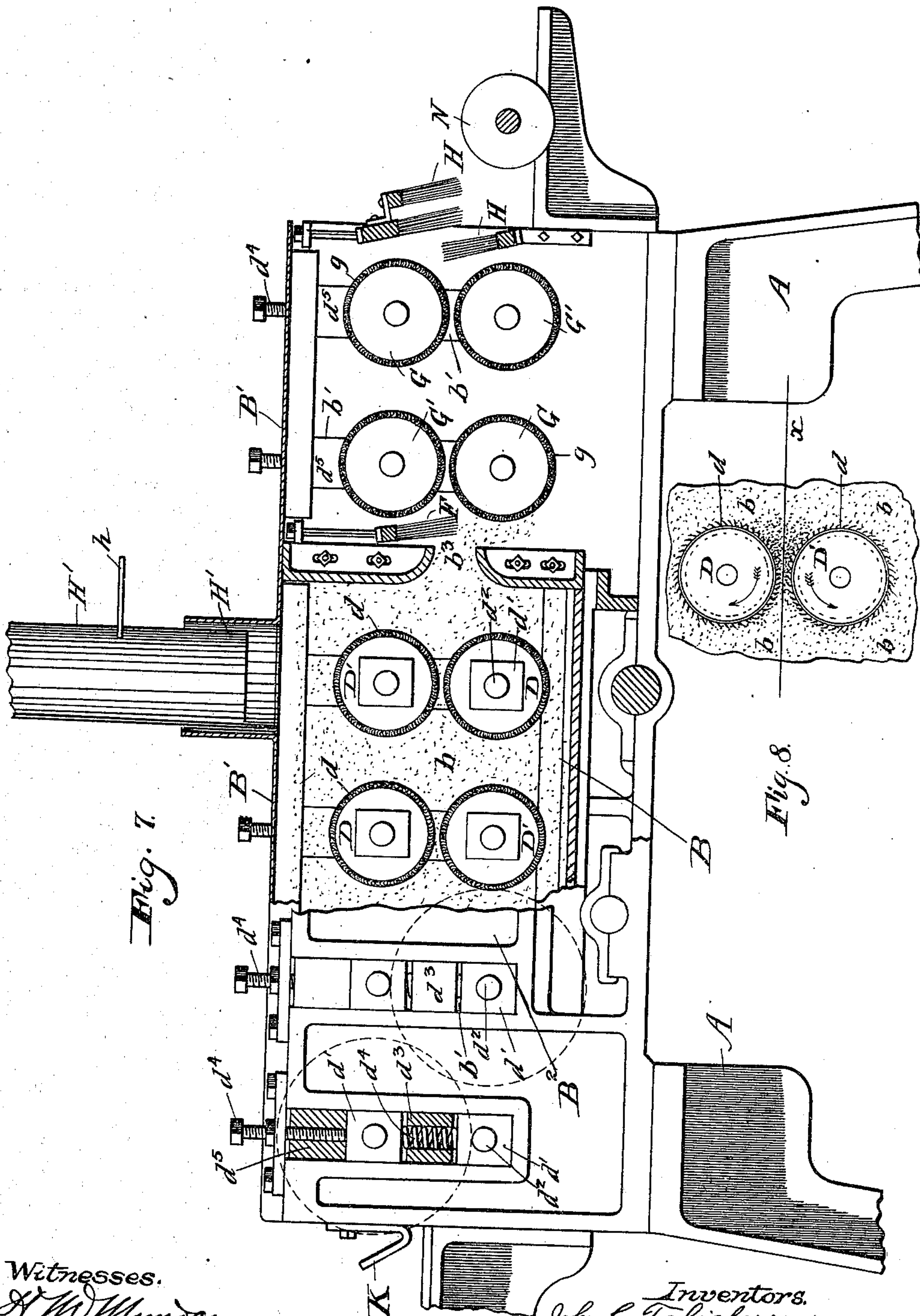
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(No Model.)

4 Sheets—Sheet 4.



Witnesses.

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UNITED STATES PATENT OFFICE.

JOHN C. TALIAFERRO AND CHARLES M. REYNARD, OF BALTIMORE,
MARYLAND.

TIN-PLATE-CLEANING MACHINE.

SPECIFICATION forming part of Letters Patent No. 709,184, dated September 16, 1902.

Application filed November 29, 1901. Serial No. 83,996. (No model.)

To all whom it may concern:

Be it known that we, JOHN C. TALIAFERRO and CHARLES M. REYNARD, citizens of the United States, residing in the city of Baltimore, in the State of Maryland, have invented a new and useful Improvement in Tin-Plate-Cleaning Machines, of which the following is a specification.

This invention relates to tin-plate-cleaning machines.

The object of the present invention is to provide a machine or apparatus of a simple, efficient, and durable construction by means of which the palm-oil, grease, or other flux covering the surface of freshly-tinned sheets may be completely, perfectly, and rapidly and cheaply removed from the freshly-tinned sheets as they are discharged from the tinning mechanism and without marring or injuring the fine, delicate, and more or less soft tin coat-surface of the hot freshly-tinned sheets. We have discovered that this highly important and useful result may be practically and successfully accomplished; and herein our invention consists by passing the hot freshly-tinned sheets through a mass or body of bran or other absorbent pulverulent cleaning material by the coöperative action of cleaning-rolls covered with sheepskin, hair, or other soft fibrous covering and revolving in the body or mass of bran in pairs, the rolls of each pair being separated or at a distance apart, so as to have no direct contact with the tin plate or sheet passing between them, and operating to grip, convey, and rub the sheet simply by or through the agency of continual but constantly-changing layers of bran or cleaning material carried upon or by the surface of the fibrous-covered rolls and interposed between the rolls and the sheets by reason of their being separated or out of contact with each other and revolving in the mass or body of bran or cleaning material. To increase the rubbing action of the interposed layers of bran carried upon the rolls against the sheets to be cleaned, the rolls are revolved at different speeds, and preferably the upper and lower rolls of each pair are driven at different speeds from each other, and the high-speed and low-speed rolls are preferably also alternately arranged—that is to say, a

high-speed upper roll being adjacent to a low-speed upper roll and a fast lower roll being next to a slow lower roll. As the pairs of rolls revolve together in the mass or body of bran and carry by reason of their fibrous covering thick layers of bran upon their surface they tend to compact the mass of bran directly in front of the pair of rolls, and when the sheet enters between the rolls the bran is pressed and compacted against the sheet as it is fed or forced along by the rolls through the mass of bran, so that the forward motion of the sheet through the body of bran creates a rubbing action which is intensified by the compacting, wedging, pressing, or gripping operation of the rolls upon the bran as they revolve therein. As in our invention neither the rolls nor their sheepskin or fibrous coverings have any direct contact with the surface of the sheets, but simply revolve in the mass of bran and are continually covered and protected by a thick layer of bran, the rolls and their coverings are subjected to no wearing or rubbing action and are extremely durable, and for the same reason in our invention the rolls do not become foul or saturated with oil or grease, and so require renewal, whereas in tin-plate-cleaning machines heretofore in use and employing sheepskin or other fibrous covered rolls revolving closely together and having direct and rubbing contact with the sheets the rolls are speedily worn out and require to be frequently renewed as to their coverings and also quickly become so foul or saturated with oil or grease as to speedily become inefficient in operation. In our invention also as the hot freshly-tinned sheets pass directly from the discharge-chute of the tinning mechanism or its lifter into a body or mass of bran, which completely envelops and incloses the hot sheets, the sheets operate to heat the bran or cleaning material, which increases its absorbent and cleaning effect, while at the same time the enveloping mass of cleaning material serves to retain the heat or keep the sheet hot during the cleaning operation, thus greatly facilitating the complete removal of the oil or grease from their surface, and in our invention the cleaning-rolls revolving at a distance apart in the body or mass of bran tend to continually stir the body of bran. This tends

to constantly change the bran or cleaning material in contact with the sheets. This stirring action of the body of bran is also aided or supplemented by the passage of the sheets
 5 between the rolls revolving at a distance apart, so that layers of bran are also constantly being conveyed along with the sheets upon their upper and lower surfaces by the coöperative action of the separated rolls. The
 10 stirring and constant changing of the bran which comes in contact with the surface of the sheets is also coöperatively aided and supplemented by providing the closed box or receptacle with a bran-discharge hopper or pipe
 15 and a bran feed or supply pipe through which the cleaning material constantly feeds in and out of its box or holder.

Our invention also consists in the novel construction of parts and devices and in the novel
 20 combinations of parts and devices herein shown and described, and specified in the claims.

In the accompanying drawings, forming a part of this specification, and in which similar letters of reference indicate like parts
 25 throughout all the figures, Figures 1 and 2 are side elevations, looking from opposite sides, of a machine or apparatus embodying our invention. Fig. 3 is a rear elevation; Fig. 4, a
 30 central vertical section. Fig. 5 is a plan view; Fig. 6, a detail elevation, partly in section, of one pair of the cleaning-rolls, showing a sheet greatly exaggerated in thickness between them. Fig. 7 is an enlarged vertical
 35 section, partly in elevation; and Fig. 8, a detail cross-section of one pair of rolls, illustrating the operation.

In said drawings, A represents the frame of the machine, and B a closed box or receptacle for containing the mass or body of bran
 40 or other absorbent granular cleaning material b , through which the sheets x to be cleaned are to be passed or forced. Its cover or top B' is preferably removable.

C represents the discharge-chute of a tinning mechanism or its lifter, down which the hot freshly-tinned sheets pass or feed to the cleaning mechanism, and C' the feed-table. The feed-table may preferably be furnished
 50 with a vibrating feeder C^2 for feeding or pushing the sheets into the cleaning box or receptacle B.

$D D'$ are a series of pairs of cleaning-rolls revolving at a distance apart in the body
 55 or mass of bran b , one roll D of each pair being preferably a fast or high-speed roll and the other, D' , a slow or low-speed roll, the high and low speed rolls being alternately arranged above and below each other about
 60 as indicated in the drawings. Each of the rolls $D D'$ has a soft fibrous covering d , preferably sheepskin, with the wool thereon. The two rolls $D D'$ of each pair are preferably arranged about from one-half inch to one inch
 65 apart, so that a layer of bran from one-fourth to one-half inch in thickness will be interposed between each roll and the sheet passing be-

tween the two rolls. This will be readily understood from Figs. 7 and 8 of the drawings. The opposite sides B^2 of the box B are preferably castings furnished with vertical slots
 70 or ways b' to receive the journals or boxes d' of the roll-shafts d^2 . Blocks d^3 , furnished with springs d^4 and interposed between the shafts d^2 , hold the rolls yieldingly separated. 75
 Set-screws d^4 , passing through the filling-blocks d^5 , serve to adjust the extent to which the rolls are held apart. The several blocks or boxes $d^2 d^3 d^5$ close the slots or ways in the box sides and prevent the escape of bran. 80

The bran box or receptacle B is furnished at its opposite ends with slots or openings $b^2 b^3$ for the sheets to pass in from the table C' and to pass out of the box. The bran box or receptacle is preferably provided with
 85 four pairs of rolls $D D'$. At the exit slot or opening b^3 of the bran box or receptacle B a brush F, composed, preferably, of long bristles, is provided, which serves to prevent the bran from escaping too freely at
 90 the exit slot or opening and also to brush or remove the bran or cleaning material from the upper surface of the sheet. At the exit end of the closed box or receptacle B pairs of dusting or polishing rolls $G G'$ are preferably
 95 provided, the same being preferably covered with sheepskin or other buffing material g and revolving closely together, but at different surface speeds, so as to have a direct gripping and rubbing action upon the
 100 sheets passing between them. Brushes $H H$ at the discharge end of the machine are provided, between which the sheets pass and which serve to remove any dust, bran, or other material from their surface. 105

H^3 is a discharge-hopper for the bran beneath the dusting and polishing rolls $G G'$ and bran box or receptacle B to collect the bran or cleaning material issuing from the
 110 box B. The box B is furnished with a bran feed or supply spout H' , provided with a valve h to regulate the supply of bran to the box and keep the same filled. The discharge-hopper H^3 has a conductor H^2 for conveying the bran or cleaning material back to the
 115 supply-pipe H' , said conductor being furnished with any suitable elevator mechanism. The box B is provided with an inclined plate K for directing or deflecting the edge of the sheet into the slot or opening b^2 . 120

The vibrating feeder C^2 is operated at intervals as required in unison with the lifter of the tinning mechanism by a cam C^4 through the connecting-lever C^5 and link C^6 . The momentum of the sheets as they issue from the
 125 lifter of the tinning mechanism down the feed-chute C will ordinarily itself cause the sheets to pass into the box B and into the grip of the moving bran layers carried by the first pair of rolls $D D'$. As the fast and slow
 130 rolls $D D'$ are arranged in pairs, revolving together, but at different speeds, the forward motion of the sheet through the body of bran will be at a speed different from that of the

surface speed of either of the two rolls, thus causing the bran carried by each roll to have a rubbing action upon the surface of the sheet. This combination of the fast and slow rolls in pairs also prevents the series of rolls from having any buckling action upon the thin flexible tin-plate sheets, as the grip and forward push of each pair of rolls are substantially uniform with that of the other pairs. The fast rolls D are preferably driven at about four times to one the speed of the slow rolls D'. The required rotary motion is communicated to the fast and slow rolls by a series of small and large gears d^6 and d^7 on their respective shafts from the driving-shaft M and gear M' thereon through suitable connecting gears or idlers m .

N is a delivery-roll, which may preferably be provided at the discharge end of the machine for the sheets. Motion is communicated to it through the belt m' and pulley m^2 .

P is the driving-pulley; P', the clutch; P², the clutch-lever, and P³ the clutch-rod.

We claim—

1. In a tin-plate-cleaning machine, the combination with a box or receptacle containing a mass or body of bran or cleaning material, and having slots or openings at its ends for the sheets to pass through, of cleaning-rolls revolving together in pairs in the body of cleaning material, with a space between the rolls of each pair, and carrying on their surfaces layers of bran or cleaning material in contact with the sheets passing between them and operating to feed and force the sheets forward by the agency of the cleaning material itself, substantially as specified.

2. The combination with a box or receptacle containing a mass or body of cleaning material, of a pair of separated rolls revolving in said body or mass and operating to force the sheets through said body or mass by the agency of the cleaning material itself, substantially as specified.

3. The combination with a box or receptacle containing a mass or body of cleaning material, of a pair of separated rolls, said rolls having different surface speeds, revolving in said body or mass and operating to force the sheets through said body or mass by the agency of the cleaning material itself, substantially as specified.

4. The combination with a receptacle containing a mass or body of cleaning material, of a series of pairs of separated rolls having fibrous coverings revolving in said body or mass and feeding or forcing the sheets through said body or mass through the agency of the cleaning material itself between the rolls and the sheets passing between them, substantially as specified.

5. The combination with a receptacle containing a mass or body of cleaning material of a series of pairs of separated rolls having fibrous coverings revolving in said body or mass and feeding or forcing the sheets through

said body or mass through the agency of the cleaning material itself between the rolls and the sheets passing between them, a feed or supply pipe for delivering the cleaning material to said box or receptacle, and a discharge pipe or hopper for the cleaning material, substantially as specified.

6. The combination with a receptacle containing a mass or body of cleaning material, of a series of pairs of separated rolls revolving in said body or mass and feeding or forcing the sheets through said body or mass through the agency of the cleaning material itself between the rolls and the sheets passing between them, and dusting or polishing rolls, substantially as specified.

7. The combination with a tinning mechanism feed or discharge chute down which hot, freshly-tinned sheets pass, of a receptacle containing a body of bran or cleaning material into which the hot sheets pass directly from said feed or discharge chute, rolls revolving in pairs in said cleaning material and operating to feed or force the sheets through the same, the hot sheets heating the cleaning material and the cleaning material covering the sheets and causing them to retain their heat during the cleaning operation, substantially as specified.

8. The combination with a tinning mechanism feed or discharge chute down which hot, freshly-tinned sheets pass, of a receptacle containing a body of bran or cleaning material into which the hot sheets pass directly from said feed or discharge chute, rolls revolving in pairs in said cleaning material and operating to feed or force the sheets through the same, the hot sheets heating the cleaning material and the cleaning material covering the sheets and causing them to retain their heat during the cleaning operation, the rolls of each pair being at a distance apart, and means for driving the rolls at different speeds, substantially as specified.

9. In a tin-plate-cleaning machine, the combination with a bran-holding box, of a series of pairs of rolls revolving and enveloped in the body of bran and between which the sheets pass, substantially as specified.

10. In a tin-plate-cleaning machine, the combination with a bran-holding box, of pairs of fast and slow cleaning-rolls revolving in the body of cleaning material, substantially as specified.

11. The combination with a bran-box having opposite sides furnished with vertical slots or ways to receive the boxes or journals of the roll-shafts, of cleaning-rolls revolving therein and having boxes or journals fitting in said slots or ways, substantially as specified.

12. The combination with a bran-box having opposite sides furnished with vertical slots or ways to receive the boxes or journals of the roll-shafts, of cleaning-rolls revolving therein and having boxes or journals fitting

in said slots or ways and springs interposed between the boxes of the rolls, substantially as specified.

13. In a tin-plate-cleaning machine, the
5 combination with a box or receptacle containing a mass or body of bran or cleaning material, having slots or openings at its ends for the sheets to pass through, of cleaning-rolls revolving together in pairs in the body of
10 the cleaning material, with a space between the rolls of each pair, carrying on their sur-

faces layers of the bran or cleaning material in contact with the sheets passing between them, and a brush at the exit-slot in said box for the sheets to prevent the cleaning material issuing too rapidly at the exit-slot, substantially as specified. 15

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