

No. 632,325.

Patented Sept. 5, 1899.

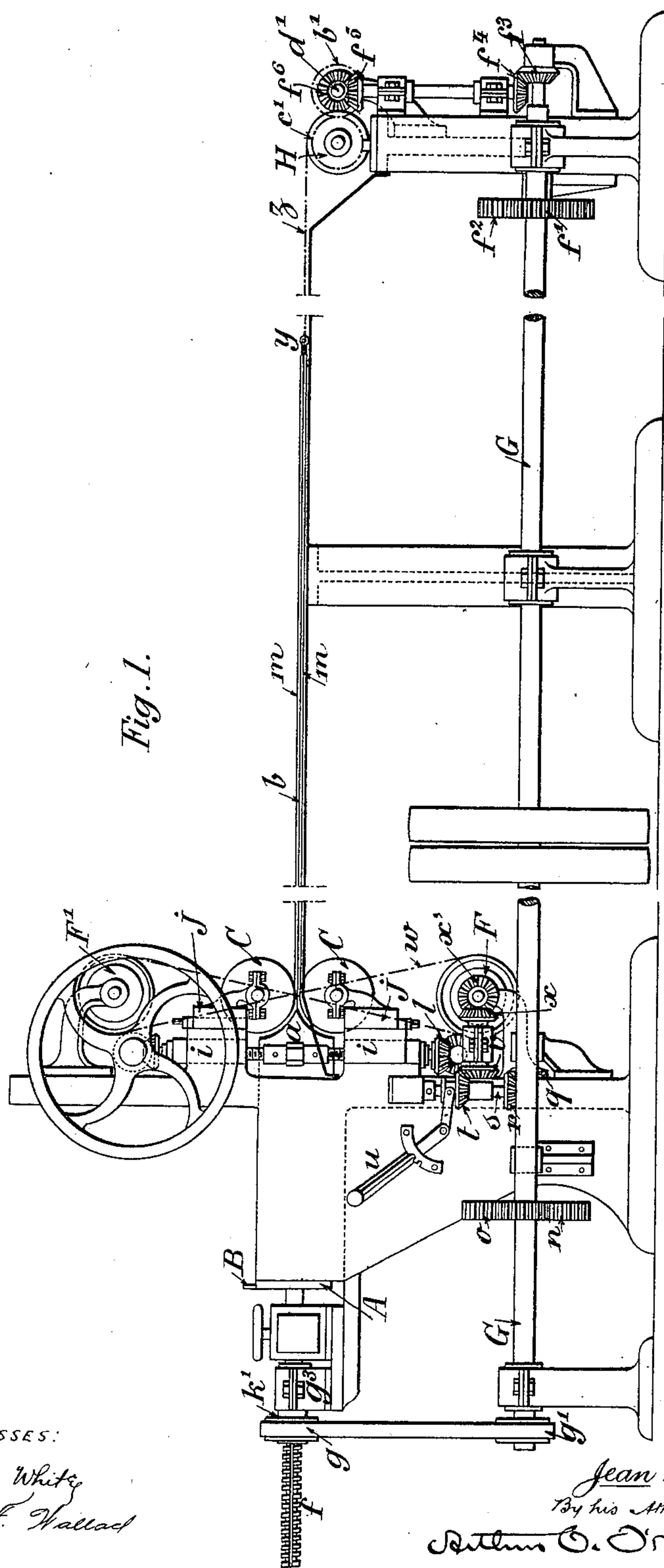
J. F. ROULLEAU.

APPARATUS FOR MANUFACTURING IMITATION LEATHER.

(Application filed Nov. 10, 1898.)

(No Model.)

3 Sheets—Sheet 1.



WITNESSES:

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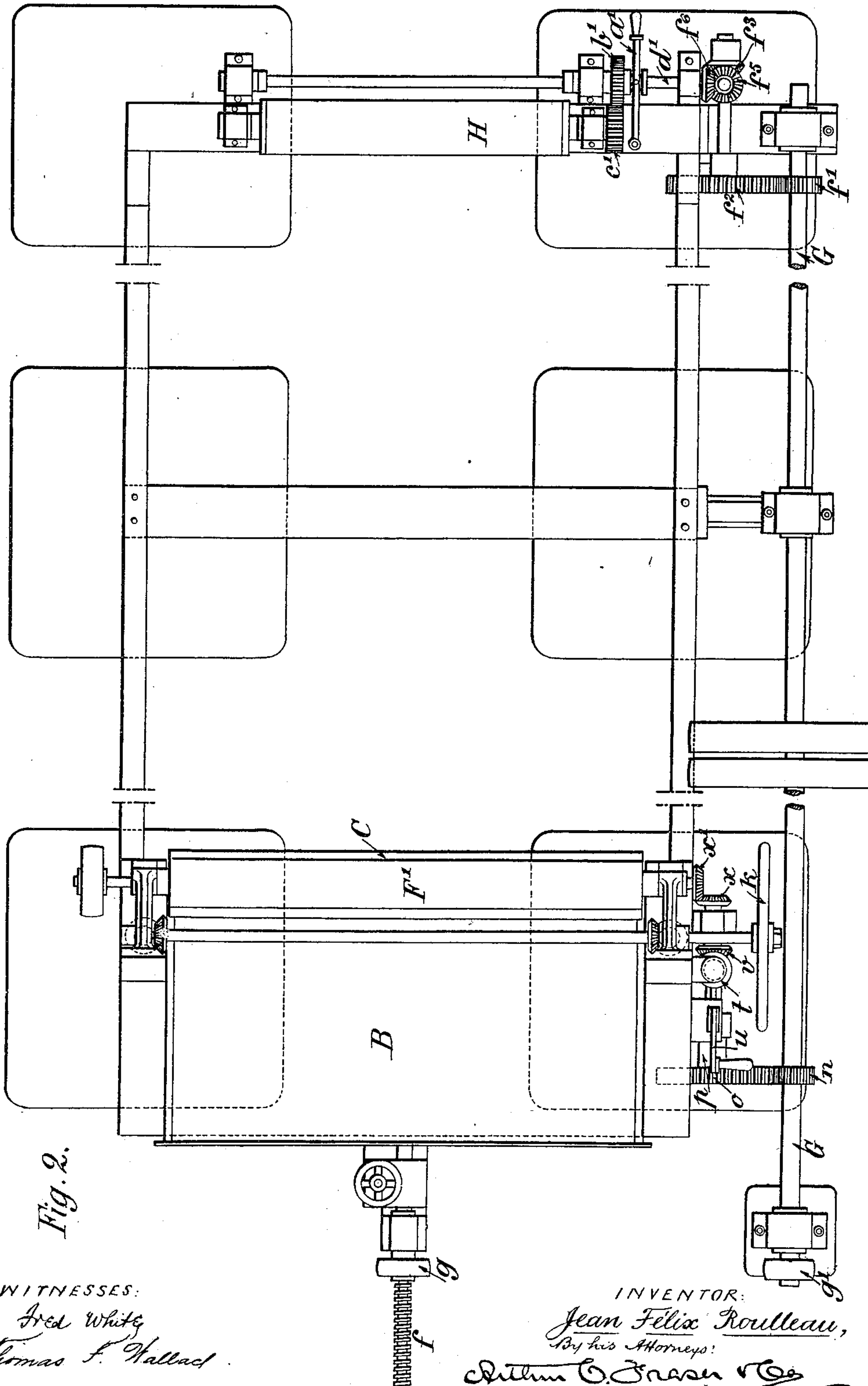
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3 Sheets—Sheet 2.



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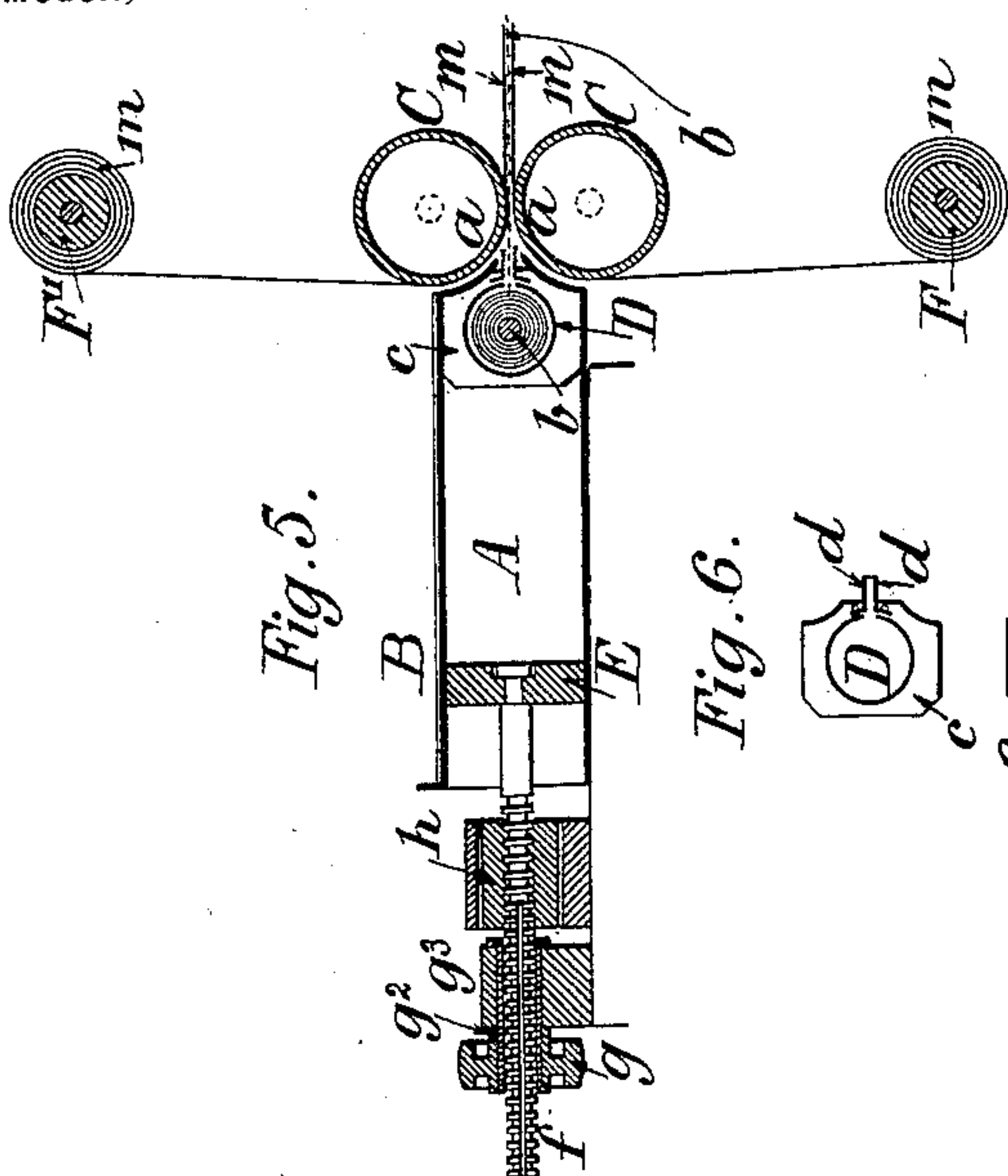


Fig. 5.

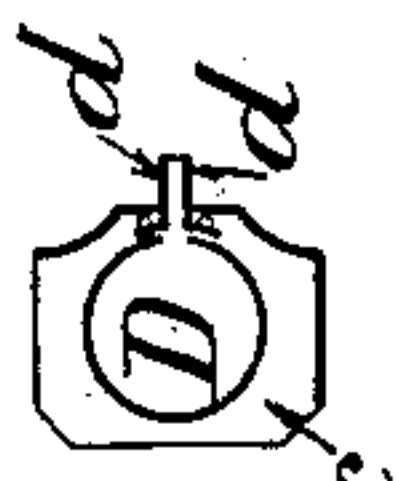


Fig. 6.

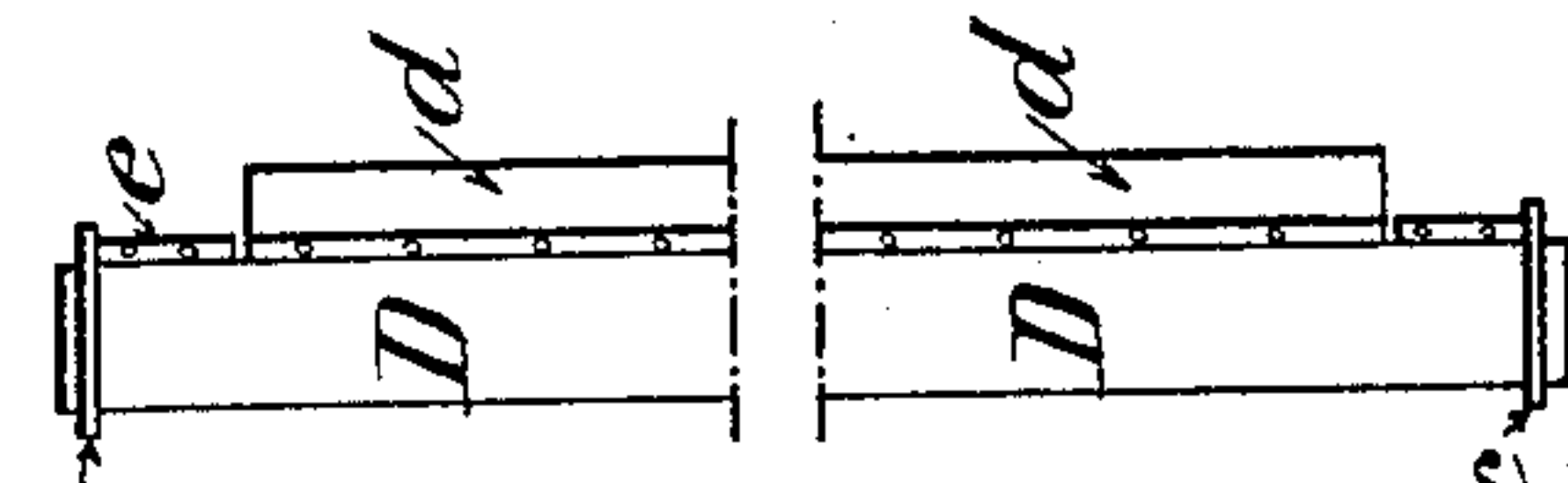


Fig. 7.

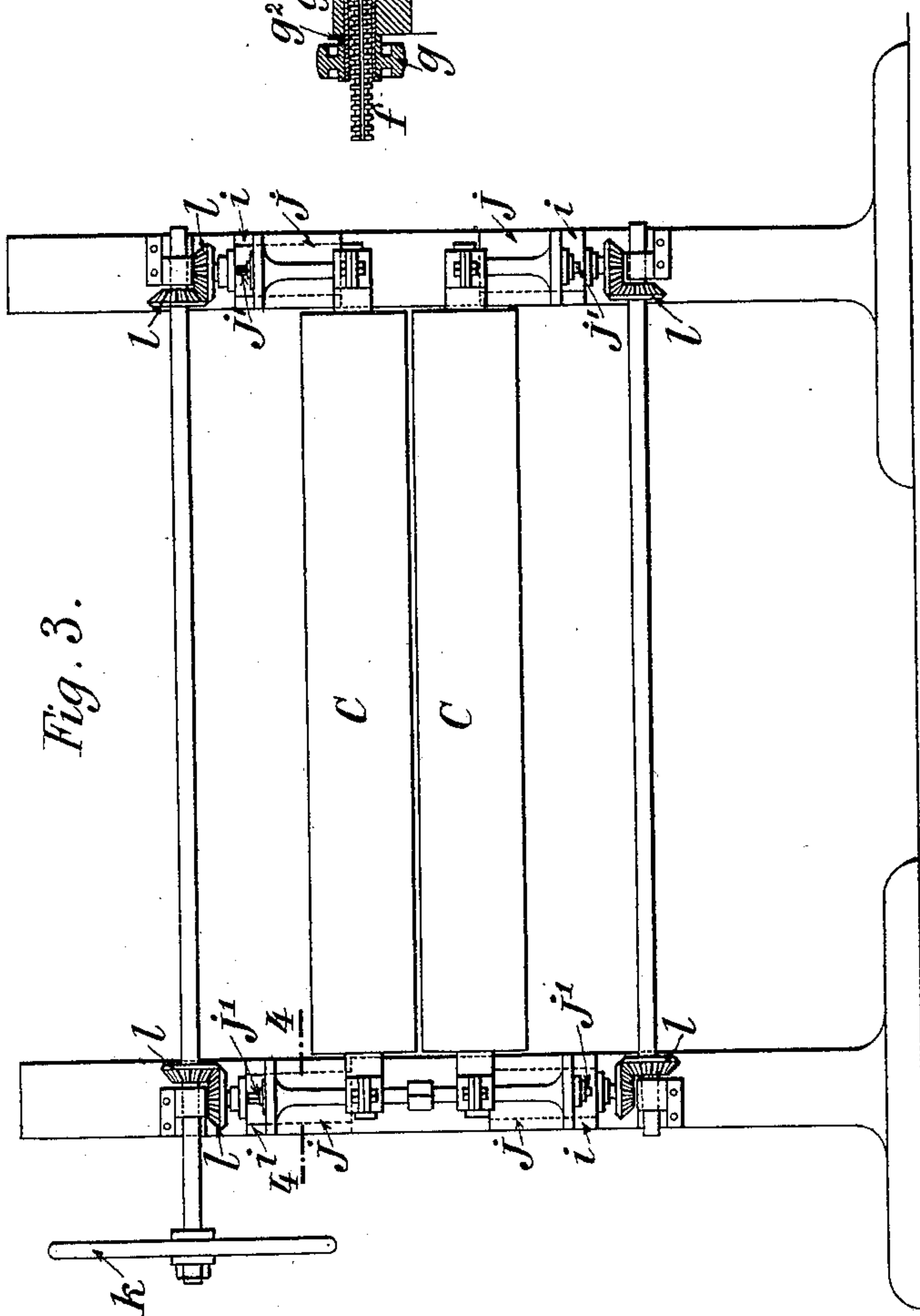


Fig. 3.

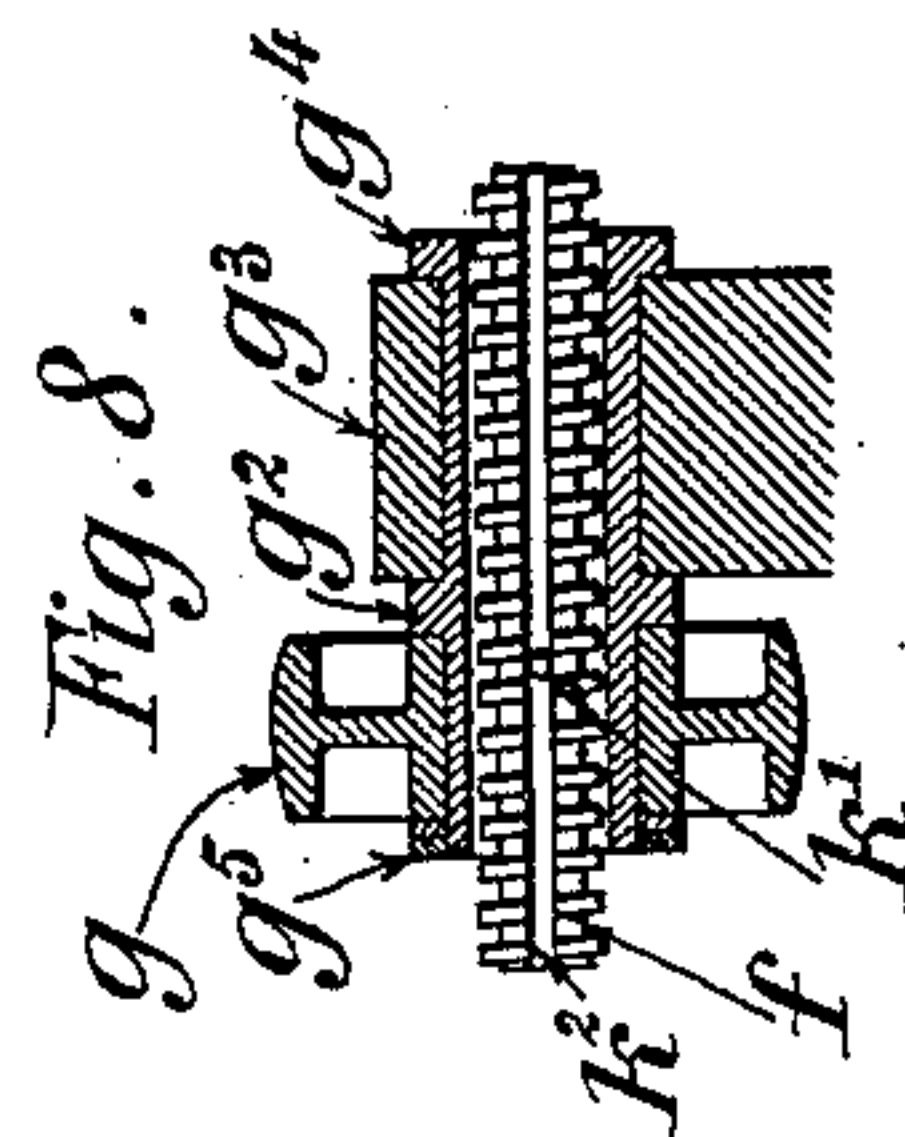


Fig. 8.

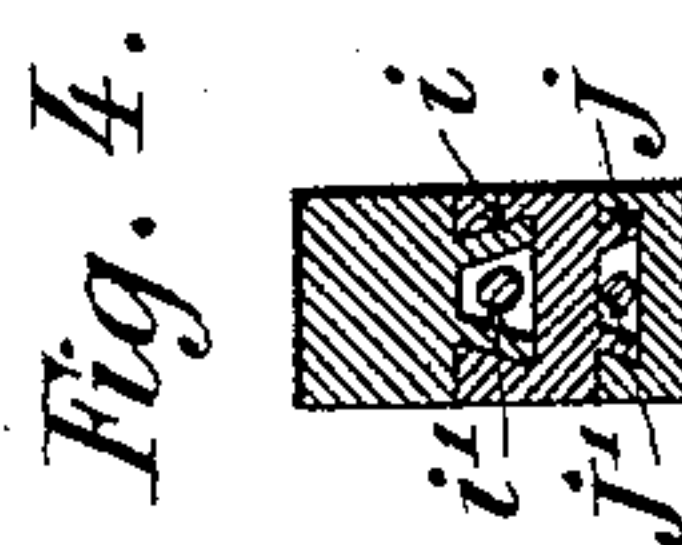


Fig. 4.

WITNESSES

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UNITED STATES PATENT OFFICE.

JEAN FELIX ROULLEAU, OF PARIS, FRANCE.

APPARATUS FOR MANUFACTURING IMITATION LEATHER.

SPECIFICATION forming part of Letters Patent No. 632,325, dated September 5, 1899.

Application filed November 10, 1898. Serial No. 696,070. (No model.)

To all whom it may concern.

Be it known that I, JEAN FELIX ROULLEAU, a citizen of the Republic of France, residing in Paris, France, have invented certain new and
5 useful Improvements in Apparatus for the Manufacture of Imitation Leather, of which the following is a specification.

My invention relates to improved apparatus for the manufacture of imitation leather,
10 the composition or paste for which is preferably made by intimately mixing scrap or waste leather with a solution of india-rubber in benzin, (for example, one kilogram five hundred
15 of non-vulcanized india-rubber to twenty-five to thirty-five kilograms of benzin.) Toluene, spirits of turpentine, sulfuret of carbon, or other solvent may also be employed. To thin the solution, it is advisable to add to the benzin about five per cent. of its weight of alcohol. I add to the solution the waste leather
20 from the scraping of glove-skins, and which consists of leather in thin filaments or in a fine state of division, like down or wool. The paste can be colored by means of soluble color or with earth colors. The paste thus prepared is taken to the spreading-machine, which constitutes my improved apparatus in its preferred form. This spreading-machine consists, chiefly, of a forcing-box containing
30 the hereinbefore-described composition to be spread, in which works a piston which forces the said material around a fabric or cloth forming a kind of core. This fabric, covered on both sides with the composition, passes
35 between two adjustable cylinders simultaneously with two cloths which envelop it, the whole being drawn by a metal cord wound upon a mechanically-actuated roller.

In the accompanying drawings, Figure 1 is
40 a side elevation. Fig. 2 is a plan of a machine or apparatus for manufacturing imitation leather according to my invention. Fig. 3 is a front elevation showing the arrangement for regulating the distance apart of the cylinders. Fig. 4 is a horizontal section on the
45 line 4 4 of Fig. 3. Fig. 5 is a longitudinal section of the forcing-box and of the rolling-cylinders. Figs. 6 and 7 are respectively a vertical section and a plan of the sheath or
50 tube containing the fabric or core for the

product to be obtained, with the end flanges which serve to keep it in the proper position.

The vessel A, of steel, in which is placed the hereinbefore-mentioned paste made from india-rubber and leather filaments, is closed
55 at its upper part by a sliding cover B. It is terminated near the front by a kind of nose *a*, following the shape of the rolling-cylinders C C.

Within the vessel A is placed a removable
60 tubular sheath D, containing the roll of fabric *b*. This fabric *b* is designed to serve as a core for the imitation leather to be made. The tubular sheath D is well secured in the vessel A by means of two end flanges or lateral supports *c c*, (shown separately in Figs.
65 6 and 7,) fixed to the tubular sheath D and adapted to fit the interior of the vessel A. The core fabric *b* on leaving the tubular sheath D passes between two guide-plates *d*,
70 fixed to the said sheath, and which serve to guide it to the cylinders C C.

The fabric guide-plates *d* not occupying the whole length of the sheath D, the places which remain free at the ends are filled up by sheet-
75 iron strips *e*. The ends of the sheath D are closed by two caps or covers, one of which is movable to allow the introduction of the roll of core fabric.

The guide-plates *d d*, guiding the core fabric *b*, are engaged in the nose *a* of the vessel A. The edges of this nose should be separated from one another a sufficient distance to leave between them and the outer surface of the guide-plates *d d* an aperture which
85 should not be less than four millimeters, which is the minimum thickness of the imitation leather which my spreading-machine will produce, the said thickness being subject to reduction by the subsequent operations of
90 drying, beating, stamping, &c.

Within the vessel A is arranged a wooden piston E, covered laterally with leather cheeks and connected to a screw *f*, the rotation of which is effected by a pulley *g*, which is actuated by a band from a pulley *g'*, fixed upon
95 the main shaft G. The pulley *g* is provided in the interior of its boss with a bronze bush *g²*, which, as shown in Fig. 5, and on a larger scale in detail in Fig. 8, (which illustrates the
100

mounting of the said pulley,) affords a certain space between its interior diameter and the exterior diameter of the screw f . This bush g^2 extends into the interior of a bracket g^3 , the flanges g^4 and g^5 , which bear against the bracket g and against the boss of the pulley, insuring the pulley g being kept in a fixed position. A pin k' , which passes through the boss of the pulley and the thickness of the bush g^2 , has its end engaged in a groove k^2 , extending along the screw f . It will be understood that the rotation of the pulley g causes the rotation of the screw f , through the medium of the pin k' and groove k^2 . As a result of this rotary movement the screw f advances in a nut h , thereby pushing forward the piston E , which forces the material around the core of fabric b .

The adjustment of the distance between the cylinders $C C$ is effected by means of two superposed carriages $i j$, containing screws $i' j'$, Fig. 4. The four carriages $i i$ are operated by a hand-wheel k , actuating bevel-gear wheels l , which cause the screws i' to turn. The small carriages j , movable upon the main carriages i , are operated separately by hand by means of the screws j' , thereby taking up the action of the other screws and the pinions and affording great precision in adjusting the cylinders.

The supporting fabrics $m m$ are wound upon rollers $F F'$, before the commencement of the operation, by means of the following mechanism: The driving-shaft G carries a pinion n , gearing with a wheel o , keyed upon an intermediate shaft p . On this shaft is fixed a bevel-pinion q , which gears with another pinion r , fixed on a vertical shaft s , upon which the bevel-pinion t can be slid up and down by operating a lever u . In the position indicated in the drawings the pinion t is in gear with the pinion v , which causes the lower roller F to turn, through the medium of pinions $x x'$. The roller F operates the upper roller F' by means of a crossed band w . These rollers $F F'$ in this manner wind up the supporting fabrics $m m$, which are placed thereon.

At the outlet of the cylinders $C C$ the supporting fabrics $m m$, which inclose the core fabric b between them, and the paste which covers the core fabric upon its two surfaces, are gripped in an iron clip y , attached to a metal cord z , wound upon a drum H . The rotation of this drum is caused by a toothed wheel c' , which can gear with a pinion b' , sliding upon a shaft d' and moved in and out of gear by operating a lever a' . The shaft d' is put in motion by toothed wheels $f' f^2$ and bevel-pinions f^3, f^4, f^5 , and f^6 . The first wheel f' is keyed upon the driving-shaft G .

The operation of the apparatus is as follows: The piston E is first drawn back, and by removing the cover B the requisite quantity of paste is placed in the vessel A and the cover restored. A roll of core fabric b is in-

serted into the tubular sheath D by removing the cap at one end thereof, and the end of the fabric is drawn out between the plates $d d$. To facilitate this operation, the cylinders $C C$ are drawn apart by turning the wheel k . The supporting fabrics $m m$ are wound upon the rollers $F F'$, as already described, and their ends are brought together and with the end of the core fabric b between them are drawn out between the cylinders $C C$ far enough to enable their advancing ends to be gripped by the clip y . The cylinders $C C$ are then adjusted together to leave the exact space required between them for smoothly rolling and compressing the paste. When these preparations have been completed, the main shaft G is started, thereby rotating the pulley g and causing the piston E to advance and force the paste out from the nozzle of the vessel, while at the same time the reel H is turned to move the cord z and draw the clip y at a rate of speed proportional to the rate of speed at which the material exudes from the nozzle. The exuding paste coats both surfaces of the core fabric b , and the sheet thus formed is drawn between the two fabrics $m m$ and subjected to pressure by the cylinders $C C$, by which it is spread out and made of uniform thickness. The charge of paste placed in the vessel A may be sufficient for only one sheet of the length of the fabrics $m m b$ or for any predetermined number of successive lengths thereof. When the spreading operation is completed, the clip y is removed and the sheet thus formed and held between the two supporting fabrics $m m$ is placed upon a frame and carried to the drier. When the drying is completed, the supporting fabrics $m m$ can be removed without difficulty, and the sheet of imitation leather obtained is ready for use for various purposes. It is particularly adapted to be figured or stamped to form decorative panels, to be used as imitation leather for upholstering furniture, for moroccoing, for making cases or sheaths, for hat-making, for the manufacture of boots and shoes, &c.

Having now particularly described and ascertained the nature of said invention and in what manner the same is to be performed, I declare that what I claim is—

1. In machines for manufacturing imitation leather, a case having a narrow aperture, means for forcing a paste through said aperture, and means for simultaneously passing a core fabric into contact with the paste in such manner that it receives a coating of such paste on both sides thereof.

2. In machines for manufacturing imitation leather a case having a narrow aperture, means for forcing a paste through said aperture, and means for passing a core fabric through said aperture.

3. In machines for manufacturing imitation leather a case having a narrow aperture, means for forcing a paste through said aper-

ture, means for simultaneously passing a core fabric into contact with the paste in such manner that it receives a coating of said paste on both sides thereof, and means for supporting said fabric after it is so coated.

4. In machines for manufacturing imitation leather, a case having a narrow aperture, means for forcing a paste through said aperture, means for simultaneously passing a core fabric into contact with the paste in such manner that it receives a coating of such paste on both sides thereof, and means for moving a supporting fabric past said aperture for receiving the core fabric after it is so coated.

5. In machines for manufacturing imitation leather, a case having a narrow aperture, means for forcing a paste through said aperture, means for simultaneously passing a core fabric into contact with the paste in such manner that it receives a coating of such paste on both sides thereof, and means for pressing said coated fabric to equalize the thickness of the coating.

6. In machines for manufacturing imitation leather, a case having a narrow aperture and means for forcing a paste therethrough, and a sheath carried in said case for holding a core fabric.

7. In machines for manufacturing imitation leather, a case having a narrow aperture and means for forcing a paste therethrough, and a sheath for holding a core fabric within said case having an opening coincident with said aperture.

8. In machines for manufacturing imitation leather, a case having a narrow aperture and means for forcing a paste therethrough, and a sheath for holding a core fabric within said case, said sheath having an opening coincident with said aperture and having flanges adapted to guide the paste through said opening and onto said core fabric.

9. In machines for manufacturing imitation leather, a case having a narrow aperture and means for forcing a paste therethrough, a supporting fabric for supporting the sheet of imitation leather issuing from said case, and means for advancing said fabric and simultaneously actuating said forcing means.

10. In machines for manufacturing imitation leather, a case having a narrow aperture, and means for forcing a paste therethrough,

a sheath within said case for holding a core fabric, and means for moving two supporting fabrics past said aperture for receiving the core fabric when coated.

11. In machines for manufacturing imitation leather, a case having a narrow aperture, and means for forcing a paste therethrough, a sheath within said case for holding a core fabric, and two rolls adapted to produce an even thickness of the sheet of imitation leather, and adapted to guide supporting fabrics past said aperture, for supporting the core fabric when coated.

12. A machine for manufacturing the herein-described imitation leather, comprising a case or body having a forcing-piston and provided with an outlet-nozzle formed as a long narrow aperture, a chamber in said case or body for inclosing a roll of base fabric, arranged so that as said fabric unwinds it passes out through said nozzle, two rollers arranged to receive between them the sheet issuing from said nozzle, and means for passing fabrics over said rollers so as to receive such sheet between them and for advancing said fabrics to draw out the sheet of paste as it exudes.

13. A machine for manufacturing the herein-described imitation leather, comprising a case or body having a forcing-piston, and provided with an outlet-nozzle formed as a long narrow aperture, two rollers arranged to receive between them the sheet issuing from said nozzle, and means for passing fabrics over said rollers so as to receive such sheet between them and for advancing said fabrics to draw out the sheet of paste as it exudes, and means for adjusting said rollers comprising double carriages for the respective rollers, adjustable perpendicularly to the plane of the sheet, the main carriages having mechanical means for adjusting them and carrying the auxiliary carriages, and the latter carrying the journals of the cylinders, and having means for adjusting them by hand with relation to the main carriages.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

JEAN FELIX ROULLEAU.

Witnesses:

J. ALLISON BOWEN,
ALEXANDRE MUTHIEN.