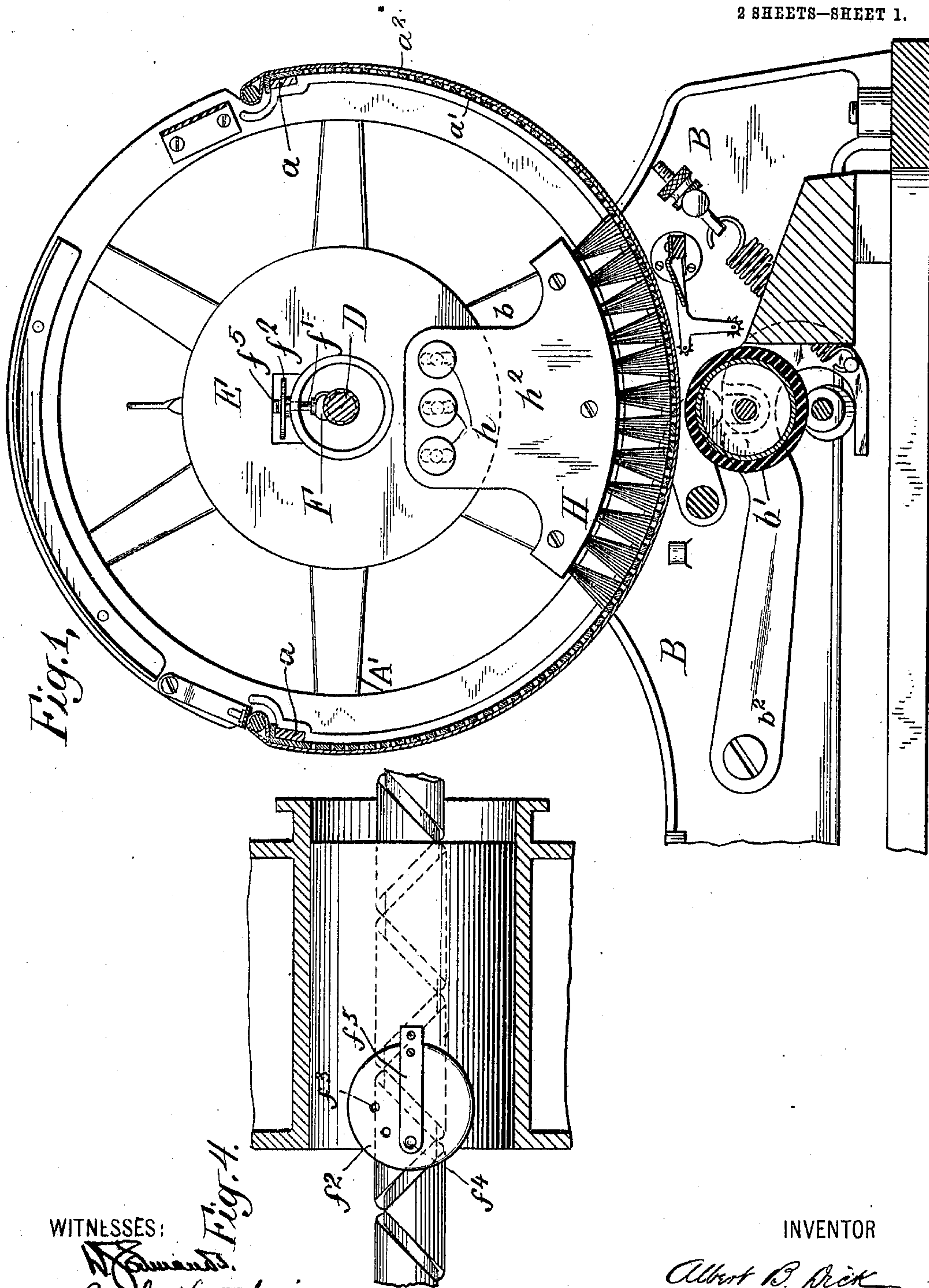


A. B. DICK.
STENCIL DUPLICATING APPARATUS.
APPLICATION FILED APR. 1, 1909.

945,266.

Patented Jan. 4, 1910.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

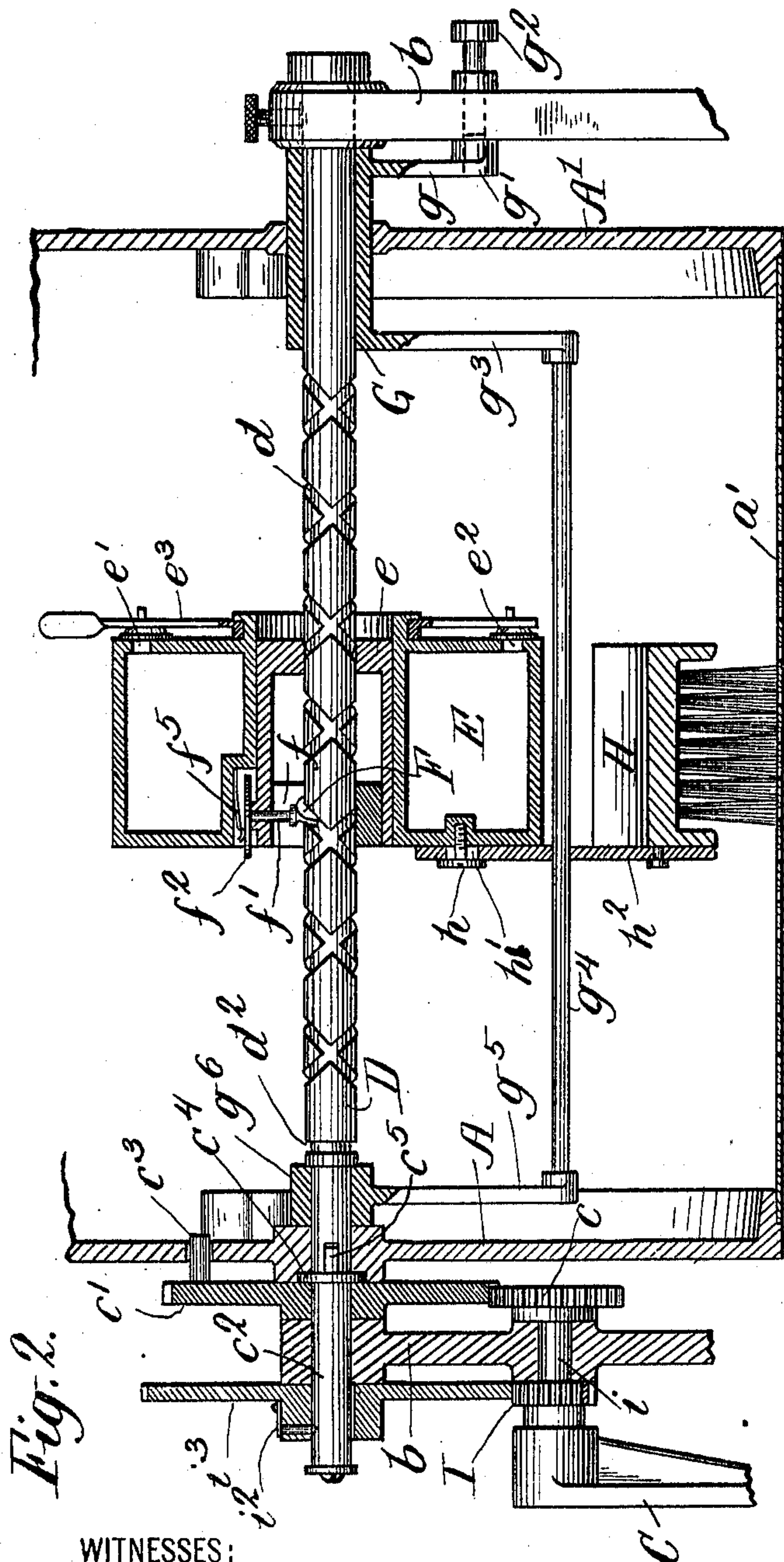


Fig. 2.

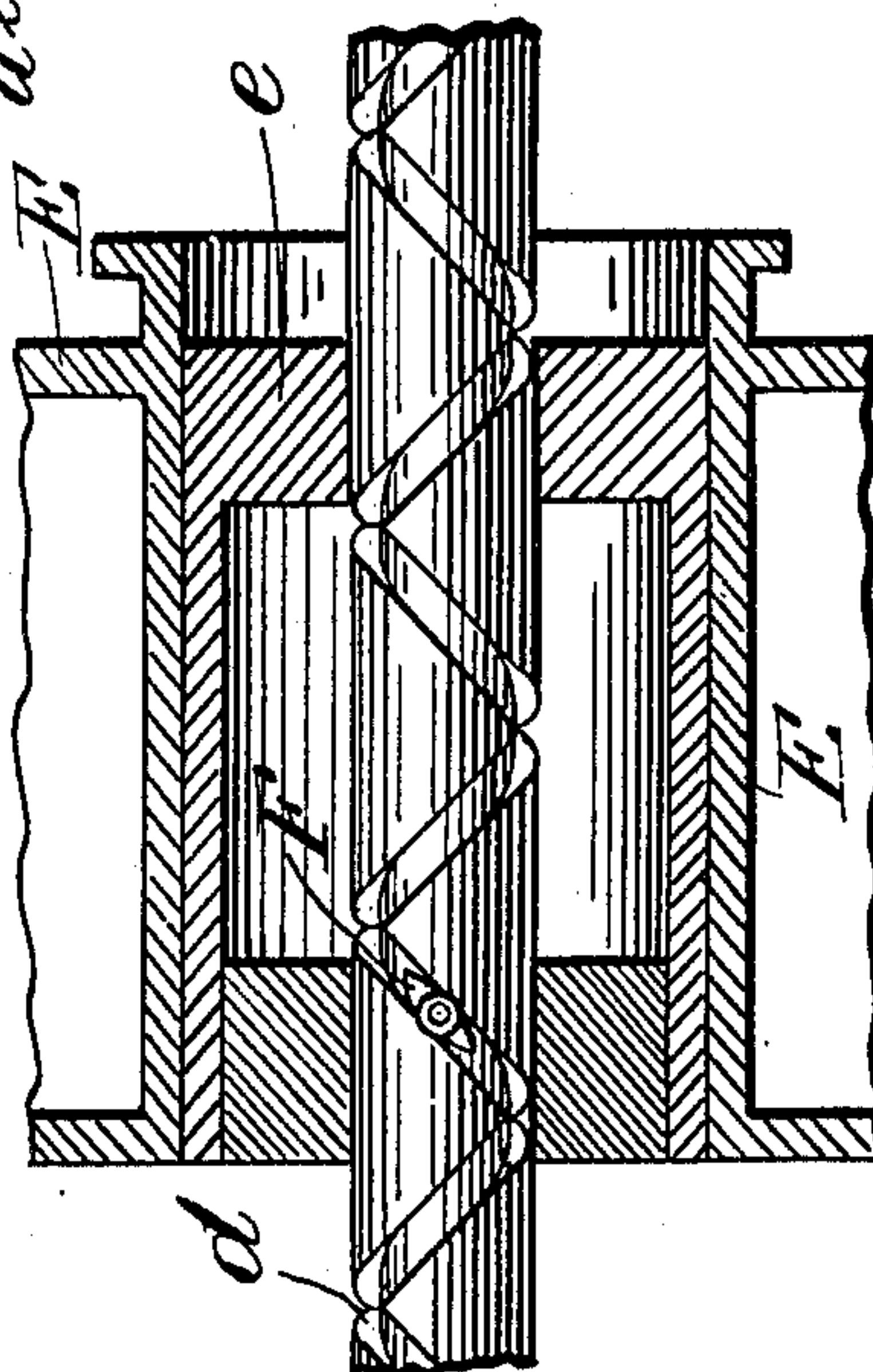


Fig. 3.

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UNITED STATES PATENT OFFICE.

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STENCIL-DUPLICATING APPARATUS.

945,266.

Specification of Letters Patent.

Patented Jan. 4, 1910.

Application filed April 1, 1909. Serial No. 487,147.

To all whom it may concern:

Be it known that I, ALBERT B. DICK, a citizen of the United States, residing at Lake Forest, in the county of Lake and State of Illinois, have invented certain new and useful Improvements in Stencil-Duplicating Apparatus, (Case C,) of which the following is a specification.

The invention relates particularly to that type of duplicating apparatus in which is employed a stencil carrying drum having rotary or oscillatory motion and to the interior of which ink is supplied for printing, through a stencil-sheet, upon an impression-sheet passed into contact with said stencil-sheet. Heretofore, ink has been supplied to the drums of machines of this type by being manually brushed thereon, an operation lacking in efficiency, neatness and despatch. The primary object of the present invention is to provide for mechanically inking the interior of the drum either during the movement of such drum and by means of such movement or while such drum is at rest, the inking device being in such case moved relatively to such drum.

In carrying out the invention, I provide the drum of a duplicating machine with an ink-container and an ink-distributor, preferably connected for simultaneous movement. These are mounted upon a shaft within the duplicator-drum, said shaft being provided with a reverse or double-groove screw coacting with a follower carried preferably by the ink-container. The shaft is so connected with the drum as to be moved therewith by the usual crank, and as a result of this operation the ink-container and distributor are fed to and fro in the longitude of the drum, the distributor being in contact with the interior face thereof. The container is provided with an outlet-port and valve, whereby from time to time, as it becomes necessary, ink may be permitted to flow therefrom either to the distributor or to the interior surface of the drum.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 is a central, longitudinal section of the principal parts of a duplicating machine, the same being provided with my improvements; Fig. 2 is a central section through the drum, certain parts being shown

in elevation; Fig. 3 is an enlarged detail view illustrating the coaction of the double-groove screw and follower shown in Fig. 2; and Fig. 4 is a similar view illustrating in plan the means for controlling the relation of the follower to the groove in the feed-screw.

Referring to these drawings, it will be seen that the drum comprises the heads A, A', connected by tie-bars *a*, *a'*, and the foraminated stencil-carrier *a'* over which extends the ink-pad *a*². The stencil-sheet (not shown) is secured in position over such ink-pad in well-known manner. The drum is supported in the upwardly-extending portions *b* of the side-members B of the frame, and immediately underlying it is the pressure-roller *b'* mounted in hinged arms *b*² common to machines of this type. Rotary motion is applied to the drum by means of the crank-handle C and pinion *c* which meshes with pinion *c'* loosely mounted upon a stub-shaft *c*² supported in the portions *b* of the frame. Said pinion is provided with a pin *c*³ engaging with a suitable recess in the drum-head A to connect the latter and said pinion for simultaneous movement. Said stub-shaft *c*² is provided at its inner end with annulus *c*⁴ and a lug *c*⁵, the purpose of which will presently be explained. Adjacent to its outer end, it carries the keyed pinion *i*³ adapted to be thrown into or out of mesh with a pinion I carried by stub-shaft *i* upon which pinion *c* is mounted. Said pinion *i*³ is movable to one or the other of two positions upon stub-shaft *c*², being held against displacement in either by latch *i*². Movement is transmitted to stub-shaft *c*² through pinions *i*³ and I and crank C save, of course, when pinion *i*³ has been moved to its outer position, out of mesh with pinion I.

D designates a reversely threaded shaft, one end of which is here shown as extending through the head A and with the annulus *c*⁴ forming a bearing for said head. Such end is bifurcated to receive the lug *c*⁵, permitting said shaft D to be driven by pinion *i*³ on stub-shaft *c*². The other end of said shaft D is supported in the member *b* of the frame at the other side of the machine. Said shaft is provided with the reversely cut thread *d*, with which coacts the follower F presently

to be referred to. It is also preferably provided with an annular groove d^2 of such width as to conveniently receive said follower when it is desired to maintain the ink-container and -distributor at rest.

The ink-container E may be of any suitable design. It is here shown as provided with a central recess having a bushing e provided with a central orifice forming a bearing for the shaft D, said container being separable from said bushing and being provided with an air-inlet port e' , an ink-outlet port e^2 and a valve e^3 adapted for manual manipulation to simultaneously cover and uncover said ports to permit or to restrain the flow of ink. Said container or an appurtenance thereof (in the present case the bushing e) is provided with means for coaction with the screw D. This is here shown as a follower F of suitable size to engage the thread or groove d and held in contact therewith by spring f surrounding its shank f' . Said shank passes through the wall of said bushing and is provided at its free end with an operating disk f^2 here shown (see Fig. 4) as having depressions f^3 formed in its upper face and adapted to coact with a boss f^4 formed upon the under side of a leaf-spring f^5 carried by said bushing. Said disk f^2 and the follower F controlled thereby are adapted to occupy one of three different positions, one being that shown in Fig. 2, another being at an angle corresponding to the pitch of the reverse thread, and the third being a position at right angles to the longitude of the shaft D in which position the follower coacts with the annular groove d^2 above referred to.

G designates a sleeve in which one end of the shaft D is supported. Upon it is journaled the drum-head A' . Said sleeve is mounted in the upwardly extending portion b of the rearward side member B and is provided with an arm g and perforate boss g' with which engages a manually operated pin g^2 . Said sleeve is also provided with an arm g^3 , within the drum, to which is connected one end of a guide-rod g^4 , the other end of which is carried by an arm g^5 secured to a collar g^6 loosely mounted upon the shaft D.

H designates an ink-distributor here shown in the form of a brush adjustably secured (by means of screws h and slots h') to the ink-container E. The guide-rod g^4 passes through the plate h^2 by means whereof said distributor is secured to said container.

In operation the movement of the crank C transmits, through pinions c, c' , rotary motion to the drum to imprint upon the impression-sheets passed between the periphery of said drum and the pressure-roller b' . If, now, it be desired to supply ink to the interior of said drum, the valve e^3 is operated permitting a suitable portion of the ink with-

in the container to fall upon the perforate carrier a' . The pinion i^3 is then pressed into engagement with the pinion I and rotary motion thereby transmitted to the shaft D. By reason of the engagement of the follower F with the thread d of said screw, the ink-container and -distributor will be fed longitudinally of the drum, as the latter is rotated, the distributor in contact with the surface of the carrier a' , thereby distributing the ink uniformly over such surface. During this operation the container and distributor are precluded from moving around the shaft D by the guide-rod g^4 which is rigidly held by means of the engagement of the pin g^2 with the boss g' on arm g . If desired, the follower F may, by means of disk f^2 , be withdrawn from engagement with the thread d and the ink-container and -distributor manually moved to any desired point within the drum, the guide-rod g^4 , in such case, remaining rigid, as above described, or being movable with the container and distributor as when the pin g^2 is out of locking engagement with the boss g' . Or (and again in either condition of said guide-rod g^4), the follower F may be placed in the annular groove d^2 , in which case, whether the shaft D be turned or not, the container and distributor will not be fed longitudinally of the drum.

If desired, the container E may be dispensed with, the distributor being secured directly to the bushing e or its equivalent, in which case the inking device will include merely a distributor of suitable form and a source of ink supply such as an (unattached) ink-can.

Having now described my invention, what I claim as new therein and desire to secure by Letters Patent is as follows:—

1. In duplicating apparatus, the combination with a drum and mechanism for rotating the same, of an ink-container within said drum and means for mechanically moving the same longitudinally of the drum at predetermined speed, substantially as set forth.

2. In duplicating apparatus, the combination with a drum and mechanism for rotating the same, of an ink-distributor within said drum and means for mechanically moving the same at predetermined speed when said drum is rotated, said means permitting rotation of the drum without moving said distributor, substantially as set forth.

3. In duplicating apparatus, the combination with a drum and mechanism for rotating the same, of an ink-container and -distributor within said drum and means for mechanically moving the same longitudinally of the drum at predetermined speed, substantially as set forth.

4. In duplicating apparatus, the combination with a drum and mechanism for rotating the same, of an ink-container within

said drum, a feed-screw for moving said container, and means for operating said screw, substantially as set forth.

5 In duplicating apparatus, the combination of a drum, means for rotating the same, a shaft disposed axially within said drum, a feed-screw on said shaft, an inking device within said drum connected to and actuated by said feed-screw, and means outside the
10 drum for operating said shaft and thereby moving said inking device, substantially as set forth.

6 In duplicating apparatus, the combination with a drum and mechanism for rotating the same, of an ink-container and -distributor within said drum, a feed-screw for moving said container and distributor, and means for operating said screw, substantially as set forth.

20 7 In duplicating apparatus, the combination with a drum and mechanism for rotating the same, of an ink-container within said drum, a feed-screw coacting with said container, and an operative connection between said screw and said drum-rotating
25 mechanism, substantially as set forth.

8 In duplicating apparatus, the combination of a drum, means for rotating the same, a shaft disposed axially within said drum, a feed-screw on said shaft, an inking device within the drum connected to said feed-screw, and an operative connection between said means for rotating the drum and said shaft for operating the shaft and thereby
30 moving said inking device, substantially as set forth.

9 In duplicating apparatus, the combination with a drum and mechanism for rotating the same, of an ink-container and -distributor within said drum, a feed-screw coacting with said container and distributor, and an operative connection between said screw and said drum-rotating mechanism, substantially as set forth.

45 10 In duplicating apparatus, the combination with a drum and mechanism for rotating the same, of an ink-container within said drum, means for mechanically feeding the same at predetermined speed, and an operative connection between said means and said drum-rotating mechanism, substantially as set forth.

11 In duplicating apparatus, the combination with a drum and mechanism for rotating the same, of an ink-distributor within said drum, means for mechanically feeding the same at predetermined speed, an operative connection between said means and said drum-rotating mechanism, and means for rendering said connection ineffective to cause feeding movement of said distributor, substantially as set forth.

12 In duplicating apparatus, the combination with a drum and mechanism for rotating the same, of an ink-container and -dis-

tributer within said drum, means for mechanically feeding the same at predetermined speed, and an operative connection between said means and said drum-rotating mechanism, substantially as set forth.

13 In duplicating apparatus, the combination with a drum and an inking device therein, of means for mechanically feeding said device, and a detachable connection in said means permitting of feeding the inking
75 device independently of said feeding means, substantially as set forth.

14 In duplicating apparatus, the combination of a drum, an inking device mounted therein, and means operated outside the
80 drum for moving said device longitudinally of the drum, said device being also operable independently of said means, substantially as set forth.

15 In duplicating apparatus, the combination with a drum, of an ink-container and an ink-distributor therein and means for rotating said drum and for moving said ink-container and said ink-distributor longitudinally thereof, substantially as set forth.

16 In duplicating apparatus, the combination of a drum, a shaft disposed axially within said drum, a feed-screw on said shaft, an inking-device within said drum, and means outside the drum for simultaneously
95 rotating said drum and operating said shaft to move said inking device, substantially as set forth.

17 In duplicating apparatus, the combination of a drum, means for rotating the same, a shaft disposed axially within said drum, a feed-screw on said shaft, an inking device within said drum coacting with said feed-screw, means outside the drum for operating said shaft and thereby moving
105 said inking device, and a rod mounted within said drum parallel to said screw and arranged to guide said inking device in its movement, substantially as set forth.

18 In duplicating apparatus, the combination of a drum, means for rotating the same, a shaft disposed axially within said drum, an inking device within said drum, a feed-screw on said shaft coacting with said device, means outside the drum for operating said shaft and thereby moving said inking device, and means for throwing said device into and out of operative relation to said shaft, substantially as set forth.

19 In duplicating apparatus, the combination with a drum and mechanism for rotating the same, of an inking device, a reversely threaded shaft coacting therewith, means for actuating said shaft, and means for rendering said actuating means operative or inoperative to actuate said shaft, substantially as set forth.

20 In duplicating apparatus, the combination with a drum and mechanism for rotating the same, of an inking device within

said drum and movable longitudinally thereof, and means for precluding movement of said device laterally of said drum, substantially as set forth.

5 21. In duplicating apparatus, the combination of a drum, means for rotating the same, a shaft disposed axially within said drum, a support movably mounted on said shaft, an inking device detachably secured
10 to said support and adapted to contact with the interior of said drum, and means operated outside the drum for moving said support longitudinally of the drum, substantially as set forth.

15 22. In duplicating apparatus, the combination of a drum, means for rotating the same, an inking device within said drum, a feed-screw within the drum for moving said inking device longitudinally of the
20 drum, means for operating said feed-screw and means for making said feed-screw

effective or ineffective to move said inking device, substantially as set forth.

23. In duplicating apparatus, the combination of a drum, means for rotating the same, an inking device within said drum, a feed-screw within said drum for moving said inking device longitudinally of the drum, means for operating said feed-screw, a rod disposed within the drum parallel to
30 said feed-screw for guiding said inking device in its movements and means for making said feed-screw effective or ineffective to move said inking device, substantially as set forth. 35

This specification signed and witnessed this 9th day of February, 1909.

ALBERT B. DICK.

Witnesses:

S. O. EDMONDS,
D. J. EDMONDS.