

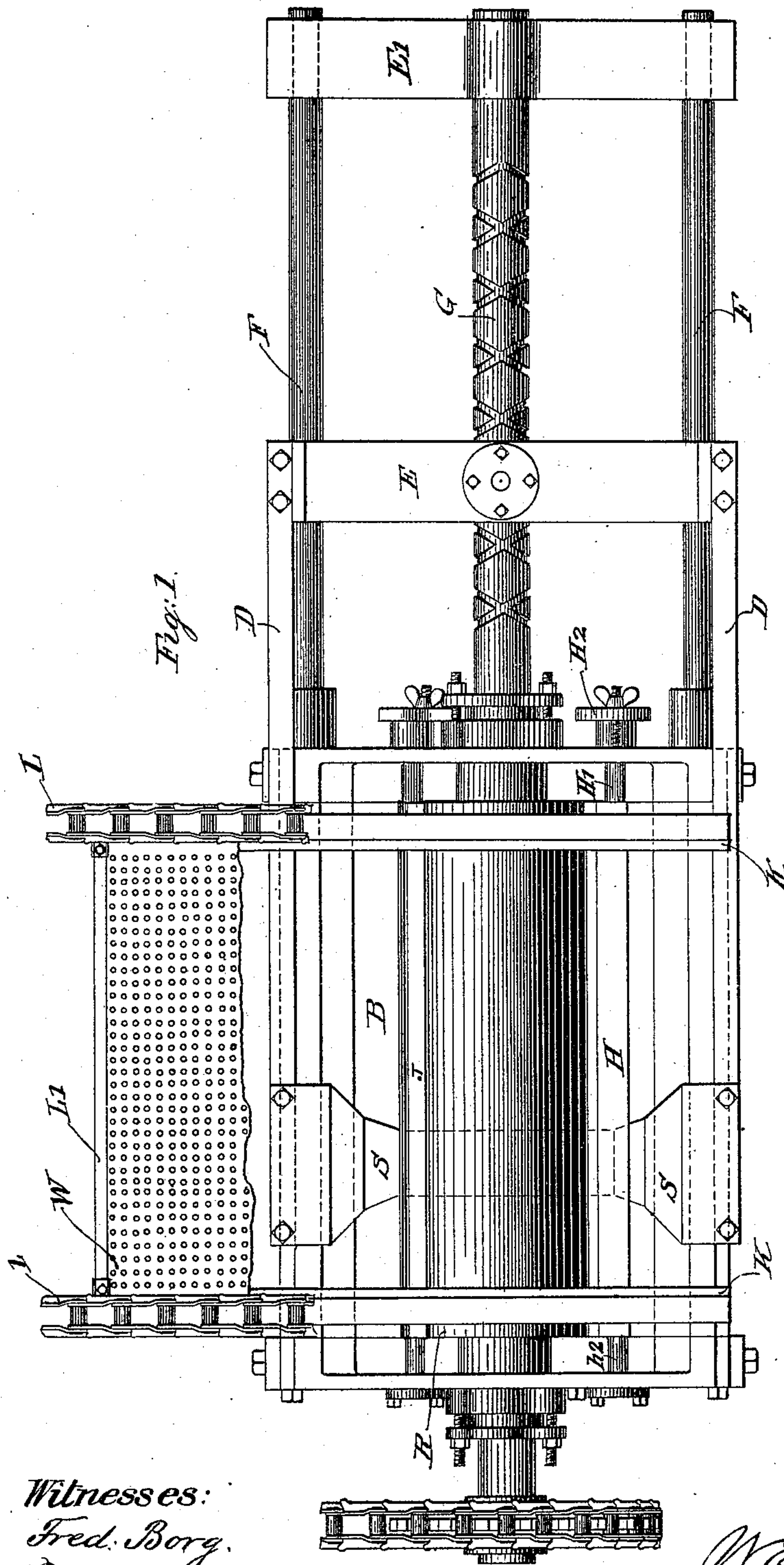
(No Model.)

3 Sheets—Sheet 1.

W. E. WILLIAMS.
MACHINE FOR DIPPING MATCHES.

No. 574,976.

Patented Jan. 12, 1897.



Witnesses:
Fred. Borg.
Frank Murphy

Inventor:

W. E. Williams

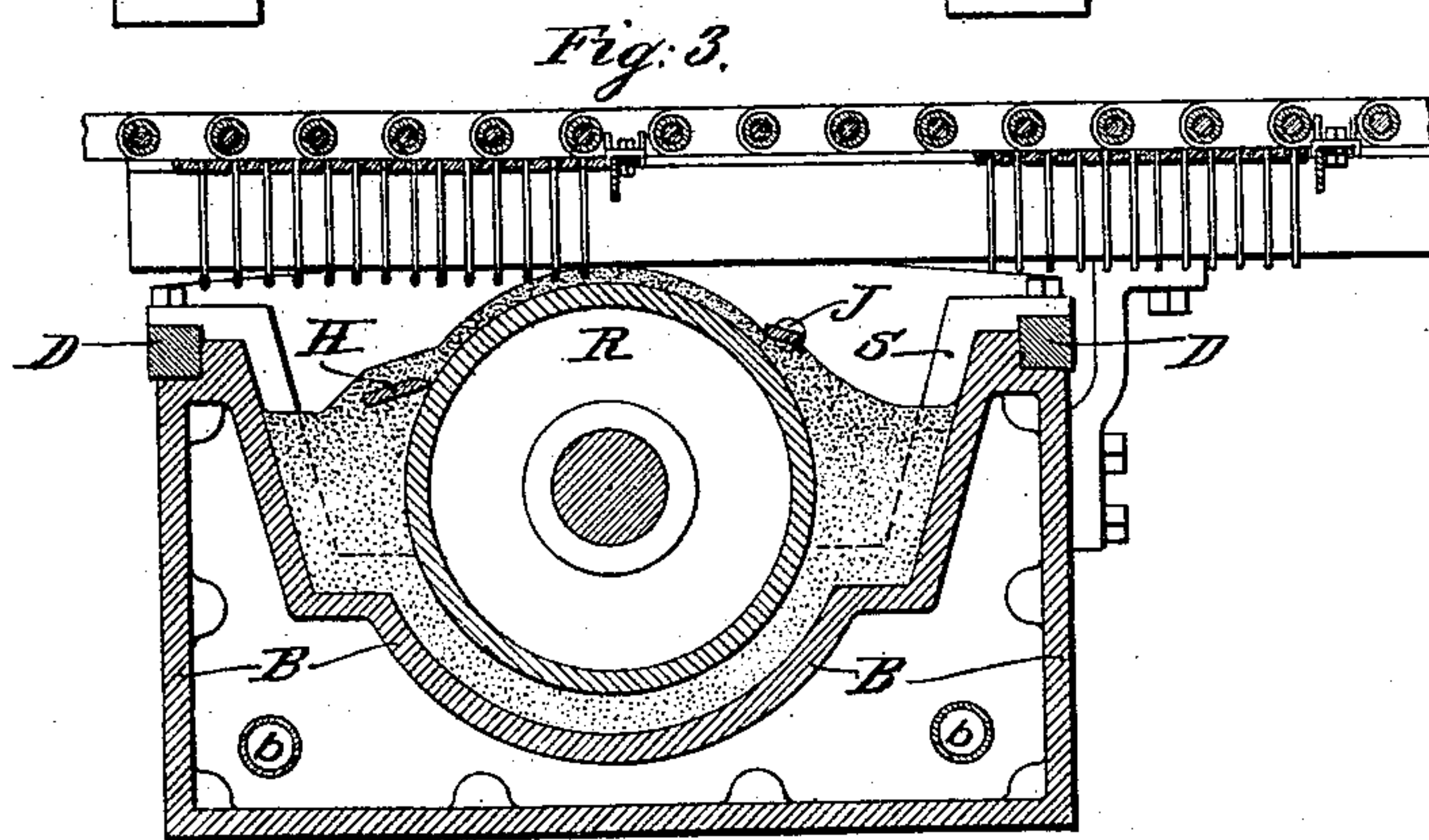
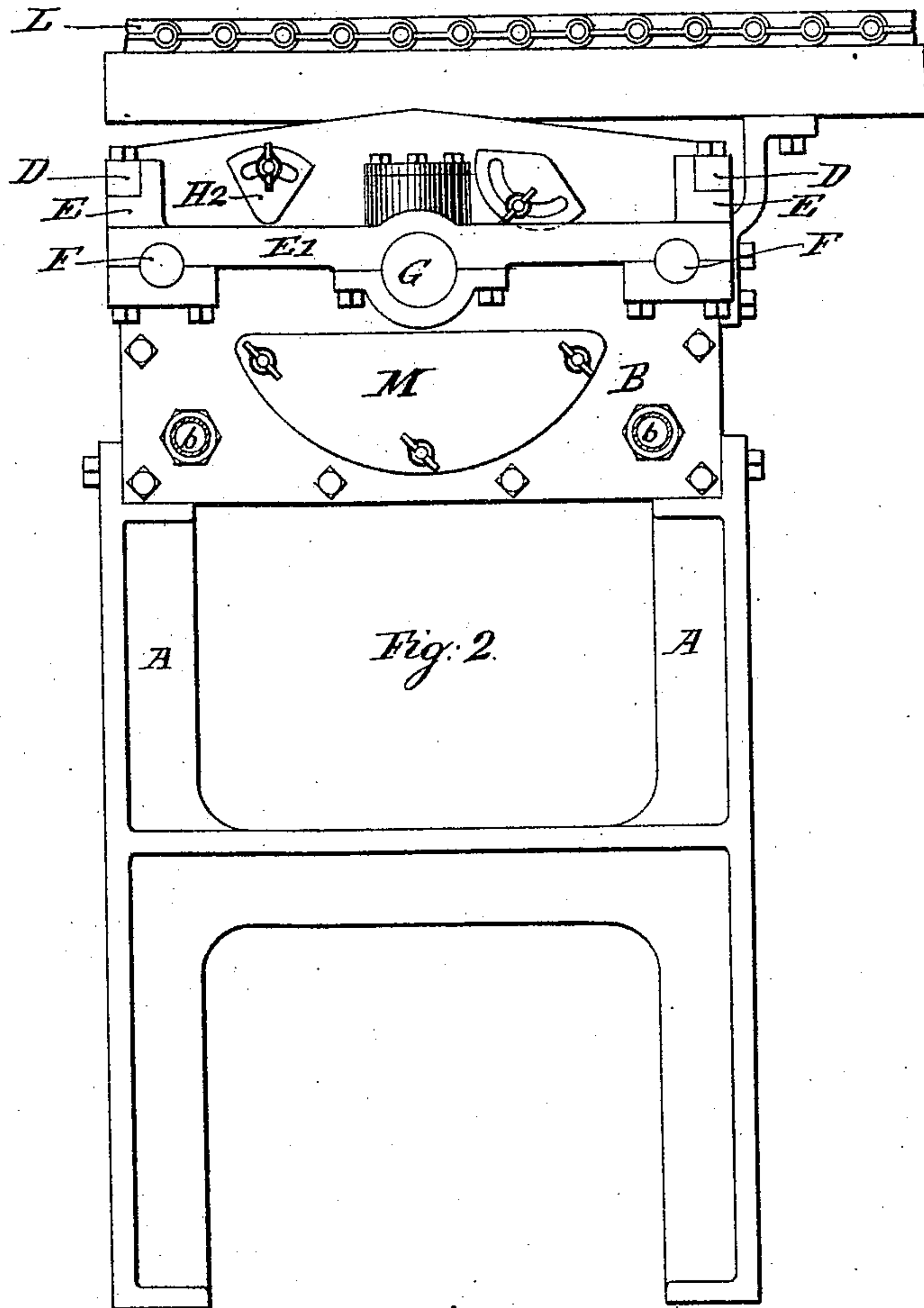
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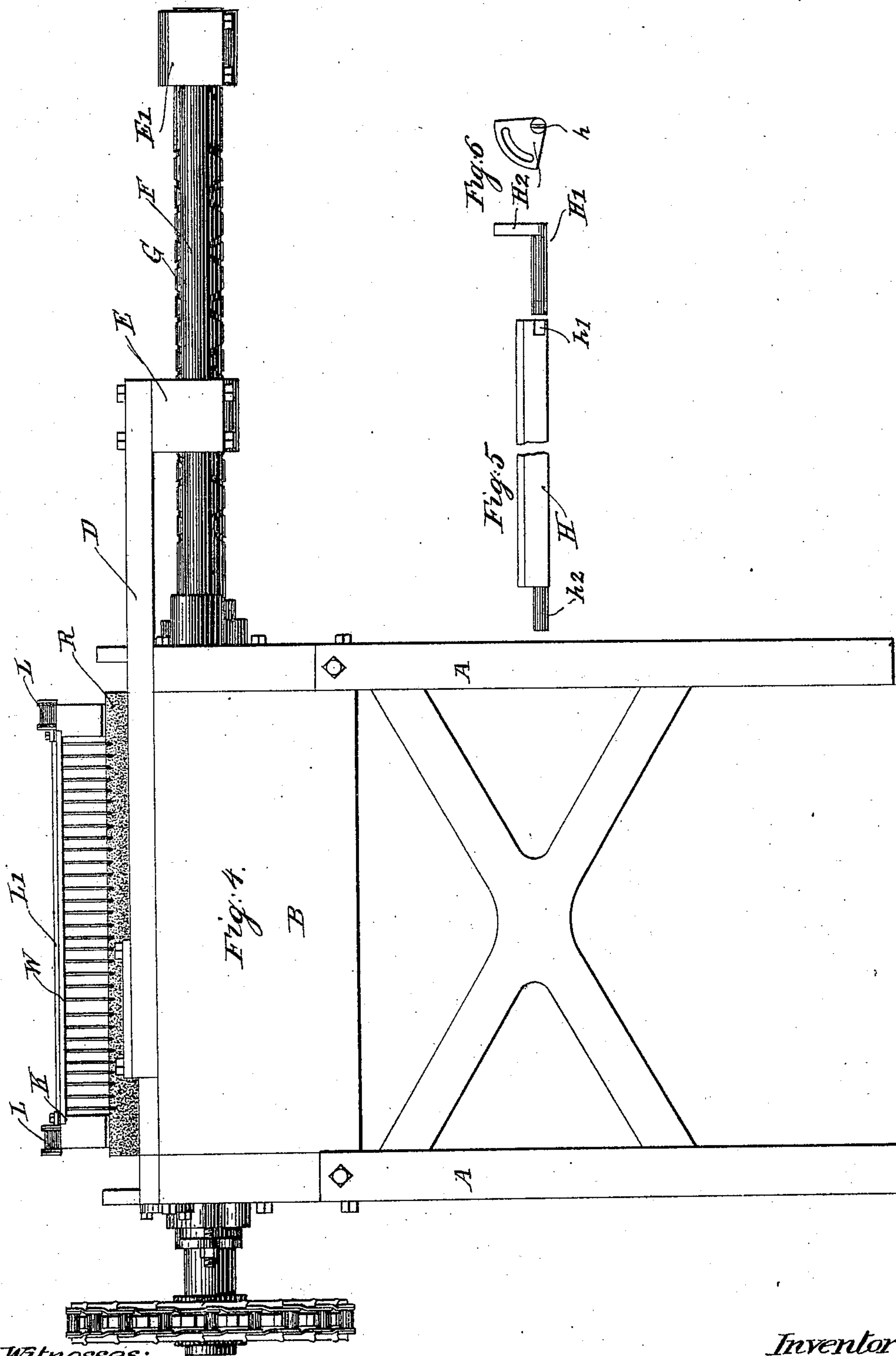
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UNITED STATES PATENT OFFICE.

WILLIAM ERASTUS WILLIAMS, OF CHICAGO, ILLINOIS.

MACHINE FOR DIPPING MATCHES.

SPECIFICATION forming part of Letters Patent No. 574,976, dated January 12, 1897.

Application filed March 29, 1895. Renewed June 11, 1896. Serial No. 595,228. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM ERASTUS WILLIAMS, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Machines for Dipping Matches, of which the following is a specification.

The object of my invention is to provide a machine for dipping match-sticks in the igniferous compound that will have the general merits more fully described herein; and the invention consists in the novel features set forth in the claims hereof.

Reference will be had to the accompanying drawings, in which—

Figure 1 is a plan view of the machine. Fig. 2 is an end view. Fig. 3 is an end sectional view. Fig. 4 is a side view. Fig. 5 is a detail view of the cleaning-scraper. Fig. 6 is the same of the cleaning-scraper spindle.

This machine is now especially designed to dip match-sticks that are assembled by being stuck in metallic plates. However, it may be used where racks or bundles are used.

A designates the frame of the machine, and B a water-jacketed box in which the composition is placed. *bb* are steam-pipes, by which the box is kept warm.

R is a roller journaled in the box and driven by the sprocket-chain.

S is a reciprocating scraper attached to the bars D, which are connected to a cross-bar E, which slides on and is supported by bars F, fixed in the end of the box B and connected together at their outer ends by the cross-bars E'.

Connected to the end of the shaft of the roller R and supported and driven thereby is a return-screw G, which is journaled in cross-bar E and in cross-bar E', and in the journal of the bar E' there are thrust bearing-shoulders for the screw G. In the cross-bar E there is pivoted a butterfly engaging the thread of the screw G, whereby by the continuous revolution of the roller R in the same direction the scraper S is made to travel back and forth the entire length of roller R.

The bottom of the cavity of box B, wherein the composition is placed, is made to conform in part to the curve of the roller, having a thin space for clearance of the roller, as is shown in Fig. 3.

The scraper S is made to conform closely

to the sides and bottom of the composition-chamber and is made thick enough to come closely up underneath the roller, so that in its travel longitudinally it scrapes closely the side and bottom of the composition-chamber and the bottom of the roller.

H is a cleaning-scraper which scrapes constantly the surface of the roller, and it is journaled in the ends of the composition-chamber and is made of two parts, the scraper-blade proper (see Fig. 5) and the spindle-piece H', Fig. 6. One end of the spindle H' is slotted at *h* and slipped over the end of the blade H in a recess *h'*, which at this point reduces the thickness of the plate. By this means the two parts are formed into a whole rigid in every lateral direction, but the parts are still free to separate by relative longitudinal movement. At the other end the spindle bears a segmental portion H², having a curved slot, which when in place engages a stud-bolt on which by a thumb-nut the spindle is fixed in place. A socket at the other end of the composition-chamber supports the end *h*² of the scraper H, and by this construction the scraper H may readily be removed by taking off the thumb-nut and withdrawing the spindle-piece, whereupon the scraper H may be taken out.

A scraper J for limiting the amount of composition carried up by the roller R is pivoted in the composition-chamber in a similar manner to that of the scraper H. A gate M is provided at either end of the composition-chamber, which may be taken off and the composition drawn from the chamber.

The match-plates W are pushed along the guideway K by sprocket-chain L, connected together by bars L', which engage the end of the plate, and the speed of travel of the plates is made to conform to the travel of the circumference of the roller R. The mechanism for driving the chains L and for removing the plates after passing the roller being no part of the invention is not shown.

The scraper S scrapes constantly the sides of the box and keeps the composition from adhering thereto and becoming dry, and thereby avoids much danger of fire, and the horizontal movement of the scraper agitates the composition and keeps bringing new portions in contact with the roller, which carries it over

and over and keeps it from settling, which is a great desideratum.

The shape of the bottom of the composition, as shown, permits a large roller to be used and still require but little composition in the box to operate successfully, which is a great desideratum, as in case of fire but little material is lost and the supply required at each time to operate successfully is reduced to a minimum. The horizontal moving scraper and stirrer S is a great desideratum in connection with the gates M, Fig. 2, as to clean the composition-chamber one has only to open the gates M and keep the machine in motion, and the action of the scraper S cleans the composition roller and chamber completely, and the discharge passes out through the gates M into a receptacle to receive it.

It must be borne in mind that the composition is made with glue for binding material and it is ugly stuff to handle, sticking to everything, and on becoming slightly dry it ignites easily, and the above-described method of cleaning is a great desideratum.

What I claim is—

1. The combination with a composition-box and a roller mounted therein in position to be partially immersed in the composition, of a scraper and stirrer lying between the roller and the bottom of the box, and means for moving the stirrer back and forth parallel to the roller's axis.

2. The combination with a composition-box and a roller arranged to rotate therein while partially immersed in the composition, of a transverse scraper and stirrer arranged below the roller to reciprocate parallel to the roller's axis, and adapted to simultaneously

scrape the surface of both the box and the roller.

3. The combination with a composition-box and a roller arranged to rotate therein with its upper side above the normal surface line of the composition, of a transverse scraper and stirrer mounted in the box and having its lower side fitting the interior surface of the box and its upper side fitting the contour of the roller, and means whereby the rotation of the roller automatically moves the scraper back and forth from end to end of the latter.

4. The combination with a composition-box and a roller mounted therein, of a rod projecting outward in the line of the roller's shaft and provided with both right and left screw-threads, a suitable non-revoluble nut mounted upon said screw, a scraper mounted alongside the roller, and devices connecting said scraper to said nut; whereby the rotation of the roller carries the scraper back and forth along its elements although the rotation is in a constant direction.

5. The combination of a composition-applying roller of a movable stirrer and scraper moving back and forth the length of the roller and composition-chamber with a gateway for discharging the composition substantially as shown.

In witness whereof I have hereunto subscribed my name, on this 26th day of March, A. D. 1895, in the presence of two subscribing witnesses.

WILLIAM ERASTUS WILLIAMS.

Witnesses:

FRANK T. BROWN,
S. E. DARBY.