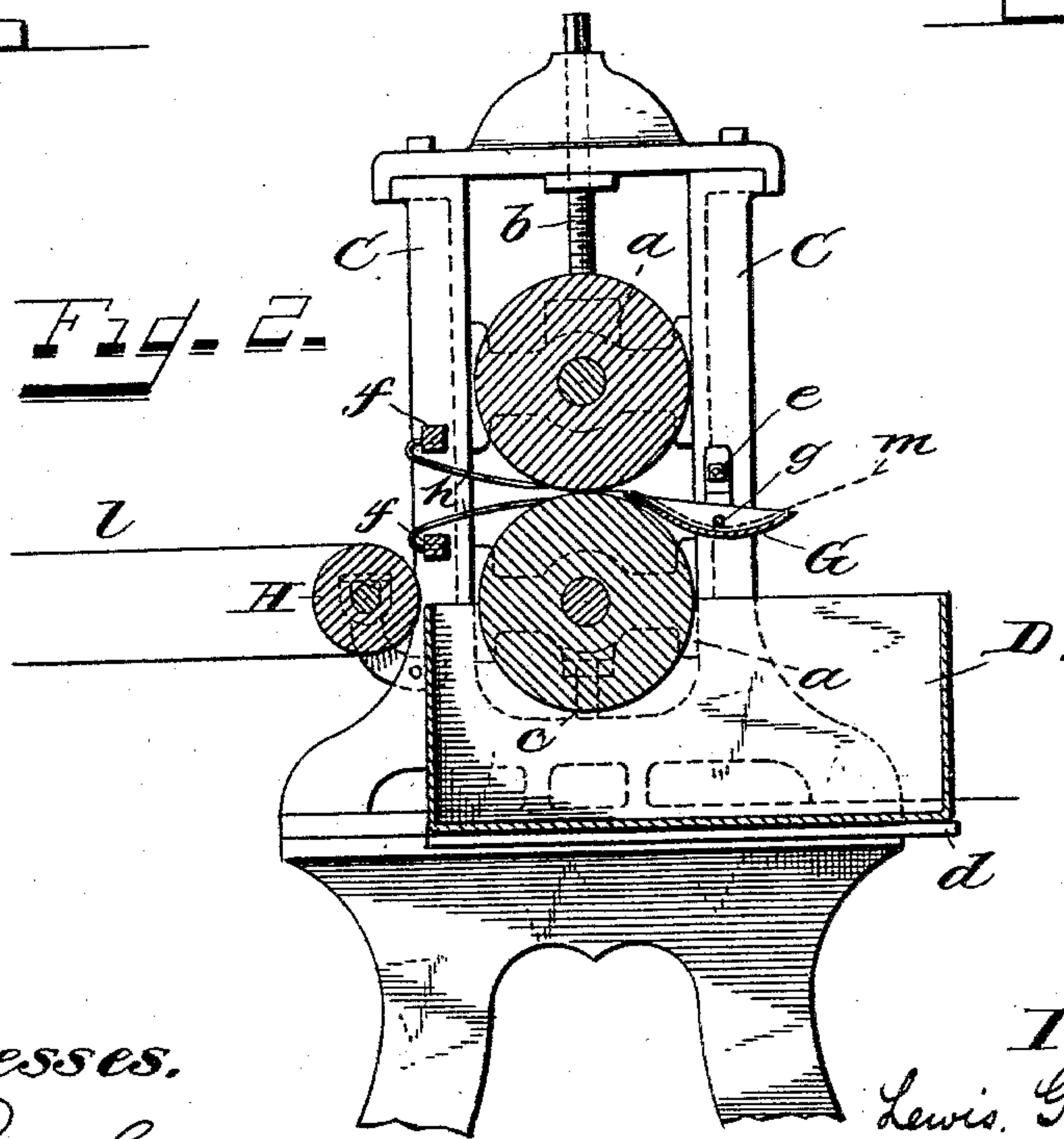
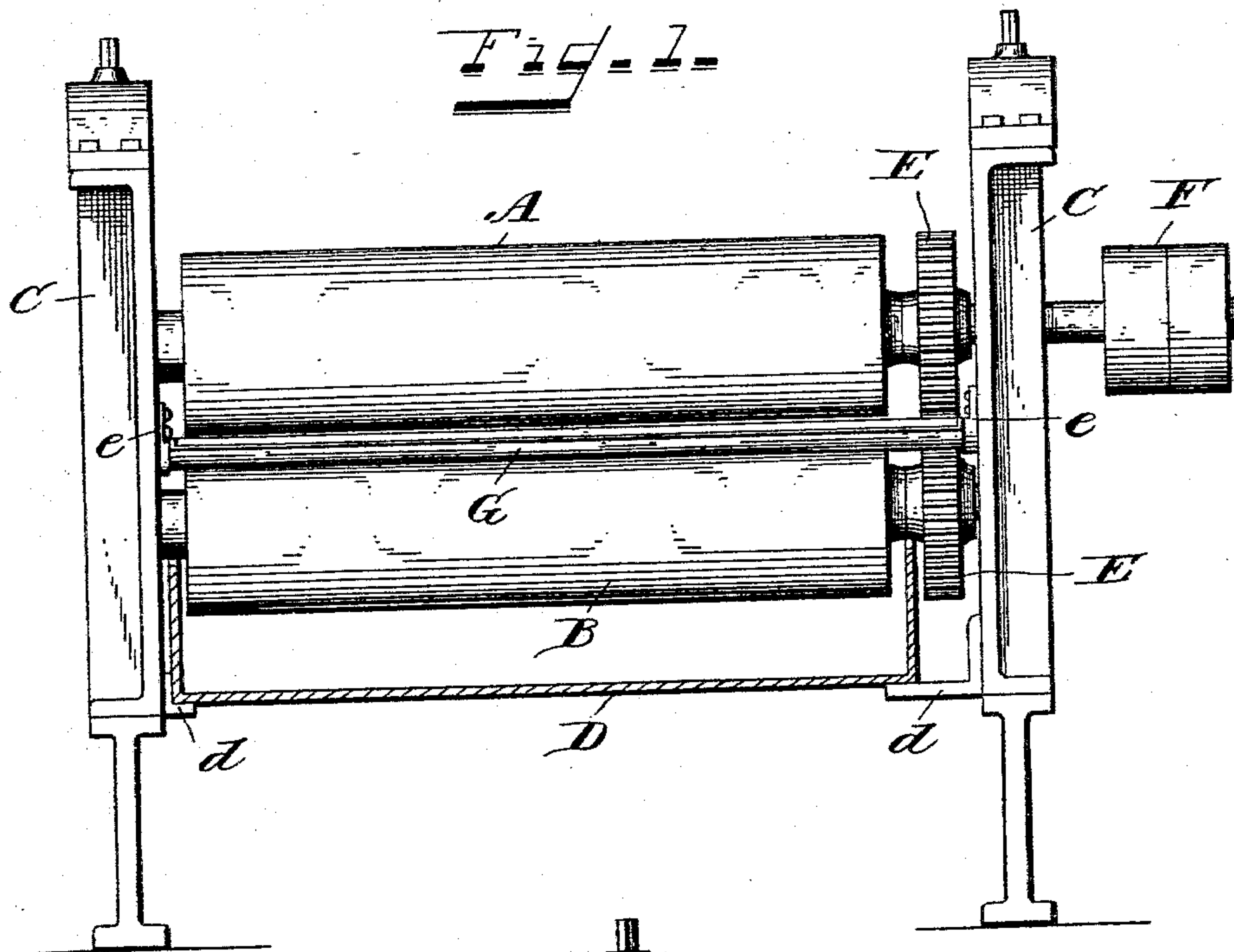


(No Model.)

L. G. REYNOLDS.
MACHINE FOR PARAFFINING PAPER.

No. 559,605.

Patented May 5, 1896.



Witnesses.

Thomson Cross.

Harvey G. Edwards

Inventor
Lewis G. Reynolds

UNITED STATES PATENT OFFICE.

LEWIS G. REYNOLDS, OF DAYTON, OHIO, ASSIGNOR TO THE REYNOLDS-EASTON COMPANY, OF SAME PLACE.

MACHINE FOR PARAFFINING PAPER.

SPECIFICATION forming part of Letters Patent No. 559,605, dated May 5, 1896.

Application filed February 29, 1896. Serial No. 581,277. (No model.)

To all whom it may concern:

Be it known that I, LEWIS G. REYNOLDS, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Machines for Paraffining Paper, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

For many years it has been customary to waterproof paper by saturating the paper in a bath of melted paraffin and then passing it between rollers where the surplus paraffin is pressed out, leaving the paper impregnated with the paraffin-wax. This process is substantially a hot process, and the paper is usually fed to the bath of liquid paraffin from a roll and thence the web is fed to the pressure-rolls. Another process has also long been in use which might be called a "cold" process. In this the paraffin is not melted, but is spread upon the paper by rubbing. Under this process, however, the paper is not impregnated, but only a thin film of paraffin is spread on one or both sides of the sheet. Paper or pasteboard which has been subjected to the cold process is not rendered so thoroughly waterproof as with the hot process, because the films of wax in time wear off, leaving the paper without further waterproof qualities, while with the hot process the waterproofing lasts the life of the paper. Of recent years there has arisen a demand for pasteboard signs and the like which have been rendered waterproof by paraffin, so that they can be exposed to the elements without damage, and a difficulty has presented itself in the economical manufacture of such signs. The cardboard cannot be mounted on a roll and the web fed to a bath of paraffin and thence to the pressure-rolls, as in the old hot process, because the cardboard is ordinarily of too hard and stiff a quality, and the signs are usually printed in sheets. The sheets cannot be dipped in the bath and then fed to the rolls, because the wax will at once congeal on whatever is employed to hold the cardboard in placing it in the bath, and the successive layers of wax thus formed soon become entirely unmanageable. All that has heretofore been

able to be devised has been either to coat the sheets of cardboard with a thin film by the cold process of rubbing or accomplish the same result by feeding the sheets to rollers, one of which is partly submerged in a liquid paraffin bath. In either case the same result is obtained. Only a thin film of wax is deposited on the sheet, and the cardboard signs are not rendered thoroughly waterproof for the reasons above given.

It is the purpose of my invention to overcome this difficulty by a machine in which the bath of melted paraffin is so arranged and constructed that sheets of stiff cardboard can be saturated with paraffin and at the same time fed to the pressure-rollers, whereby the cardboard may be rendered thoroughly waterproof to so continue the life of the paper.

In the drawings, Figure 1 is a front elevation of my improved machine. Fig. 2 is a vertical section of same in side elevation.

A and B are heavy metallic rollers of suitable dimensions, preferably made of steel. These rolls are journaled in boxes *a a*, which are mounted in the sides of suitable standards C C, and screws *b c* are employed bearing between these journal-boxes and the cross-pieces of the standards, so that the rolls may be properly adjusted and the requisite amount of pressure obtained. When desired, gearing of any of the ordinary kinds may be employed to obtain still greater pressure between the rolls. Supported on suitable brackets *d d*, secured to the standards, is a tank D, within which the melted paraffin is placed, the paraffin being kept in a liquid state by steam-pipes or in any other convenient way. The lower roller B is partly submerged in this paraffin-bath, so that when the machine is in operation a constant stream of paraffin is carried up and to both rollers.

Mounted on the roller-shafts at one end are the intermeshing gear-wheels E E, and the shaft of one of the rollers extends outside the standard C and carries a tight and loose pulley F F, by means of which the rollers are driven by power in the usual way.

Secured by arms *e e* to the standards C C is a supplemental paraffin-pan G, which extends longitudinally the length of the rollers. This pan is preferably rather shallow, and its

inner longitudinal edge is slightly curved to conform to the surface of the lower roller B and is arranged to fit in quite closely to the contacting surface of the rolls. Mounted in the sides of the pan and extending longitudinally through the pan a short distance from the bottom is a rod *g*, preferably of metal, and the pan itself is slightly inclined outwardly, so that when full of liquid paraffin, as hereinafter described, the surplus will overflow into the tank D.

Secured above and below to bars *ff*, fixed longitudinally between the standards on the delivery side of the rolls, are a series of fingers *h h*, whose inner ends hug closely the surface of the rolls to guide and deliver the sheets, as hereinafter described, while mounted on a set of rollers, one of which is shown at H journaled in arms secured to the standards, is a delivery or carrier band or set of strings *l* for holding and carrying off the sheets after they have passed the rolls.

The tank B being filled with melted paraffin kept liquid in any well-known way, the machine is then set in operation. At once a stream of the liquid is carried up to the contacting surface of the rolls, thoroughly coating them with the liquid, and the two rollers contacting with a great amount of pressure a considerable amount of the liquid fails to pass between the rolls, but flows back into the pan G, and, that being filled, thence back into the tank, so that while the machine is in operation there is a continuous flow of the liquid paraffin up to the rolls and back through the pan into the tank. The operator then takes the sheets of cardboard *m*, which have been previously printed, as desired, and passes them one at a time under the rod *g* up to the contacting surface of the rolls. In this way the cardboard becomes thoroughly saturated with the liquid paraffin before it enters the rolls and at the same time it can be fed thereto without the hands of the operator in any way coming in contact with the paraffin. After passing the rolls the fingers *h h* grasp the sheet, preventing it from sticking to either roll, and deliver it to the carrier, whence it is carried off to be removed at the other end of the room.

In addition to enabling the operator to both saturate and feed the sheets without coming in contact with the paraffin, my machine has additional advantages in that the sheets can

be fed in a continuous stream to the machine. Where the pan G is not employed, as in the older methods, each sheet fed to the rolls takes up the paraffin that may be on the rolls and in order that the upper roll may again become coated the operator has to wait for another complete revolution of the rolls before a second sheet can be fed, and to make sure that the upper roll is properly coated usually much more than a single revolution takes place between the feeding of each sheet. Consequently in a day a considerable amount of time is wasted, which my machine saves.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a machine for paraffining paper, the combination, with pressure-rolls mounted in suitable standards and a receptacle for liquid paraffin within which one of the rolls is partly submerged, of a pan secured near the contacting surface of the rolls, to catch the surplus liquid and through which pan the sheets are fed to the rolls, substantially as shown and described.

2. In a machine for paraffining paper, the combination, with pressure-rolls mounted in suitable standards and a receptacle for liquid paraffin within which one of the rolls is partly submerged, of a pan secured near the contacting surface of the rolls, to catch the surplus liquid and a rod extending longitudinally through said pan, under which the sheets are fed to the rolls, substantially as shown and described.

3. In a machine for paraffining paper, the combination, with pressure-rolls mounted in suitable standards with driving mechanism therefor, and a receptacle for liquid paraffin secured to the standards underneath said rolls and within which receptacle the lower of said rolls is partly submerged of a pan secured to said standards near the contacting surface of the rolls and a rod extending longitudinally through said pan, under which the sheets are fed, said pan being slightly inclined so that a constant stream of liquid paraffin is fed to the rolls and back through the pan to the receptacle, substantially as shown and described.

LEWIS G. REYNOLDS.

Witnesses:

H. W. NUTT,
GEORGE E. EASTON.