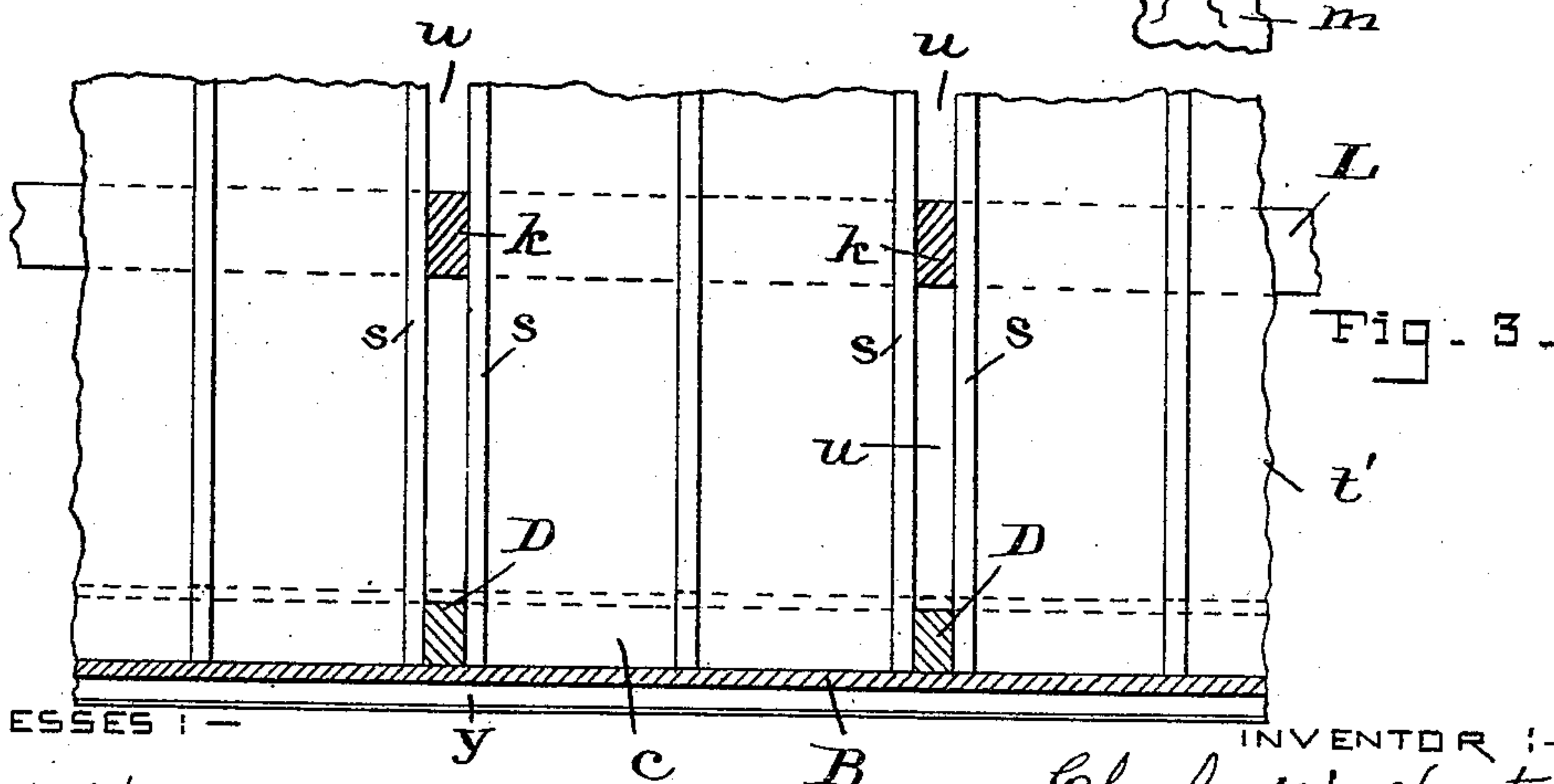
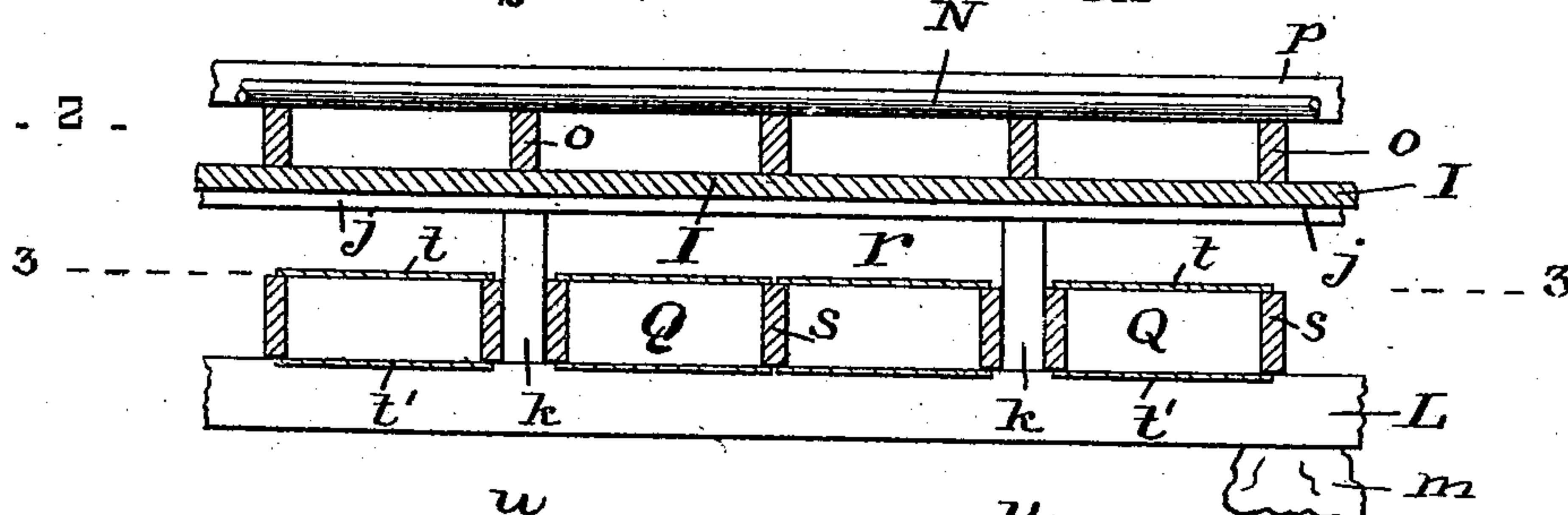
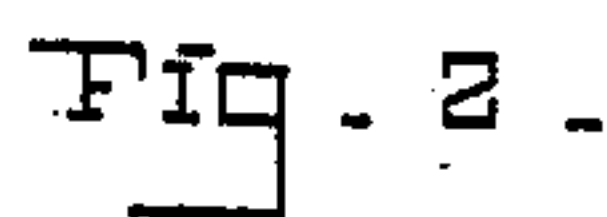
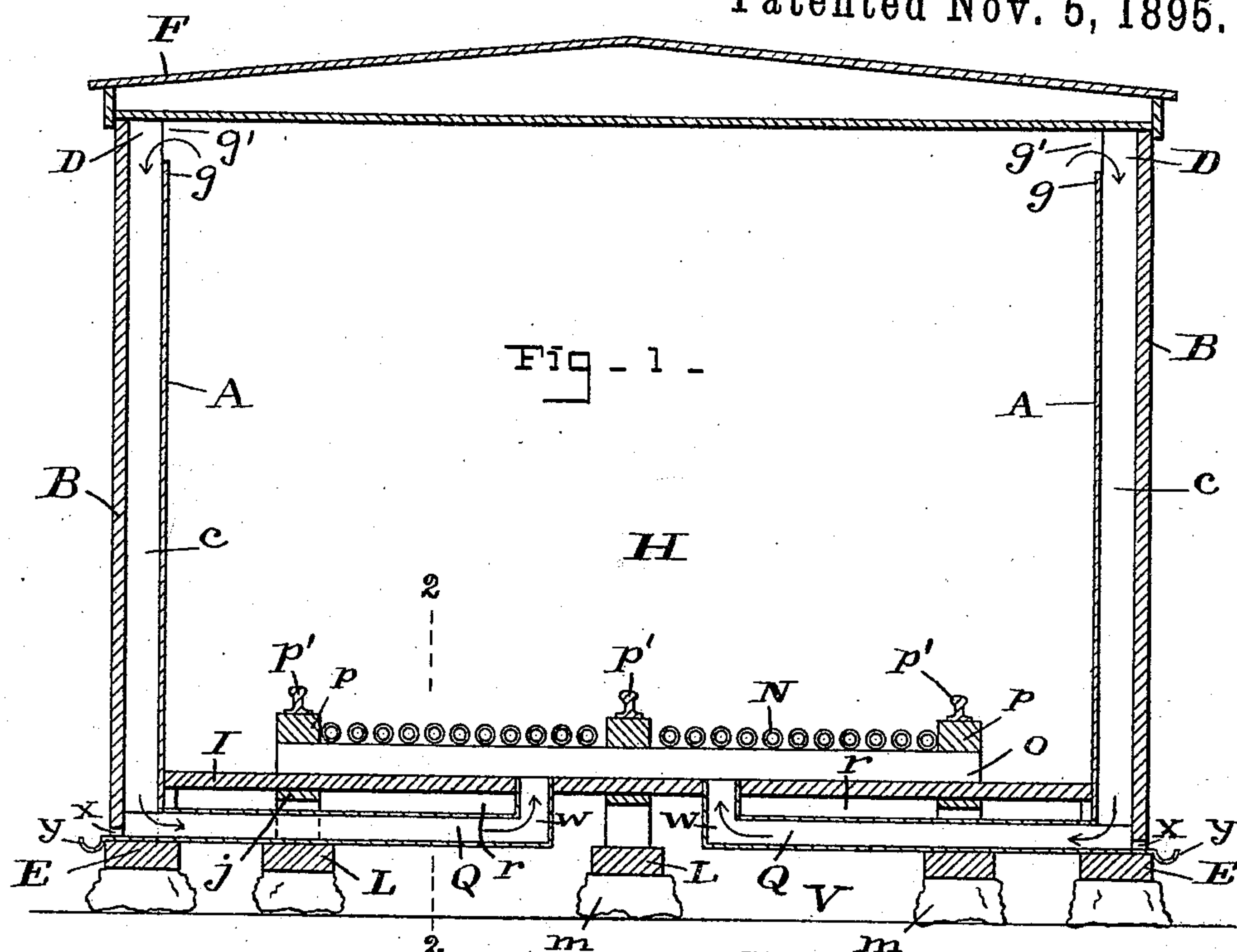


(No Model.)

C. W. NEWTON.
DRYING KILN.

No. 549,460.

Patented Nov. 5, 1895.



WITNESSES: —

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UNITED STATES PATENT OFFICE.

CHARLES W. NEWTON, OF BALTIMORE, MARYLAND.

DRYING-KILN.

SPECIFICATION forming part of Letters Patent No. 549,460, dated November 5, 1895.

Application filed June 12, 1894. Serial No. 514,283. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. NEWTON, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Drying-Kilns, of which the following is a specification.

This invention is an improvement in drying-kilns of that class which have metallic condensing surfaces or passage-ways on which the moisture of the air-currents is deposited.

One of the objects of the invention is to locate the metallic condensing surfaces where they will maintain the lowest possible temperature, in order that their efficiency may be enhanced.

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

Figure 1 is a vertical cross-section of the drying-house. Fig. 2 is a horizontal section, on a somewhat larger scale, of part of the floor and condensing air-flues, taken on the line 2 2. Fig. 3 is a horizontal plan view of the flues, taken on the section-line 3 3.

The letter A designates a vertical wall at two opposite sides of the house. This is an inner wall and preferably will be made of two thicknesses of boards with paper between them. An outer vertical wall B may be made of any suitable material, preferably metal, and these two walls form a vertical space *c*, which serves as a down passage for the moist air. The walls have studs D, which rest on the sills E, and these studs separate the inner and outer walls, and thus down passages *c* are formed between adjoining studs. The outer wall B on each side of the house extends up to and closely adjoins the roof F, while the top edge *g* of the inner wall A stops short of the ceiling, and an opening or entrance *g'* is formed to the down passages *c*, whereby the moist air from the drying-room H may pass to said down passages.

The floor I rests upon longitudinal beams *j*, which in turn are supported on short posts *k*, standing on base-girders L, which are laid on suitable foundations *m*. The short posts *k* are in line in the crosswise direction with the studs D.

The steam-pipes N, for heating, are arranged horizontally above the floor I on cross-timbers *o*, which rest on the floor, and longi-

tudinal stringers *p* have resting upon them track-rails *p'*, on which the cars may run. By this construction I mount the floor of the house above the surface of the ground and leave an air-space open to the atmosphere below the floor of the structure. Through this air-space drafts of air may pass.

I provide flues or passages constructed wholly or in part of metal and of any suitable shape or size and in communication with the drying-chamber for the circulation and condensation of the moist air, and locate said flues below the floor I of the drying-room H, where they are fully exposed to the outside atmosphere and to drafts of air which circulate below the floor.

The vertical moist-air passages *c*, at their lower ends, connect with horizontal or slightly-inclined condensing-flues Q, which are below the floor and below the steam-pipes, and an open space *r* for the circulation of air is between the top of these flues and the bottom or lower surface of the floor I. The horizontal flues Q, in the present instance, are formed by means of parallel side-boards *s* placed on their edges and metal top and bottom plates *t t'*, respectively. In forming these flues one of the side-boards *s* is placed at each side of the vertical studs D, and therefrom the boards extend toward the center horizontally below the floor. The top and bottom plates *t t'*, which are preferably brass, are secured to the edges of these boards. Thus the lower ends of the studs D are between the side boards *s* of two condensing-flues, where there is an open space *u*, which connects the ground-space V with the open space *r* below the floor. The short posts *k* rise from the girders L up through these open spaces *u*, and said spaces, which separate the flues, allow the atmosphere and drafts of air to circulate and thereby tend to keep the condensing-plates *t t'* cool. The end of each flue Q has an up-turned elbow *w*, which opens through the floor I. This elbow end is also of brass or other metal. It will thus be seen the heating-pipes N, which are low down in the drying-room H, near the floor, produce hot air, which ascends and carries with it the moisture and vapor arising from the green lumber or other material that is undergoing the drying operation. At the ceiling this moist air passes

from the drying-room H, through the openings g' to the down passages c , and thence into the nearly-horizontal condensing-flues Q, and finally through the upturned elbows w into the drying-room again. In this circuit the moist air will have deposited its moisture on the surfaces of the top and bottom condensing-plates t t' and elbow w of the flues Q. The water of condensation will flow from these flues through small openings x into a trough y , which will drain it off. The opening and trough may be on the outer side, as shown, or may be located elsewhere.

A practical and important advantage results from my construction of drying-kiln with metal-surfaced condensing-flues below the floor and with air-spaces separating said flues to allow the outer cool atmosphere to circulate below them, above them, and between them. Thus located and constructed the condensing-flues will maintain the lowest possible temperature, and such temperature is a great desideratum, as the efficiency of the flues in condensing is thereby enhanced.

It is obvious that one or any number of down passages may be in the side walls and that one or any number of metal-surfaced condensing-flues may be used below the floor. My invention is not affected by these variations.

It will be seen that by having the outer side walls and the floor of the kiln supported above

the surface of the ground an open out-door space is provided below said floor for the circulation therethrough of cooling drafts of air and that by having the metal-condensing flues wholly below and independent of said floor they are fully exposed to the out-door drafts of air, while at the same time they are sheltered from the rays of the sun.

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

In a drying kiln, the combination of a drying-room having in its outer side walls down-passages, c , which conduct the moist air from the drying-room, and a floor supported above the ground and an open out-door space below the floor for the free circulation of wind and atmosphere; steam pipes resting on supports above the floor; and horizontal condensing flues wholly below and independent of the floor—said flues having parallel wood sides, s , and sheet-metal top and bottom plates, t , t' , attached to said sides—these flues communicating from the said down-passages to the drying-room through openings in the floor.

In testimony whereof I affix my signature in the presence of two witnesses.

CHARLES W. NEWTON.

Witnesses:

CHAS. B. MANN,
THOS. C. BAILEY.