

W. ADAMSON.
MANUFACTURE OF GLUE.

No. 106,403.

Patented Aug. 10, 1870.

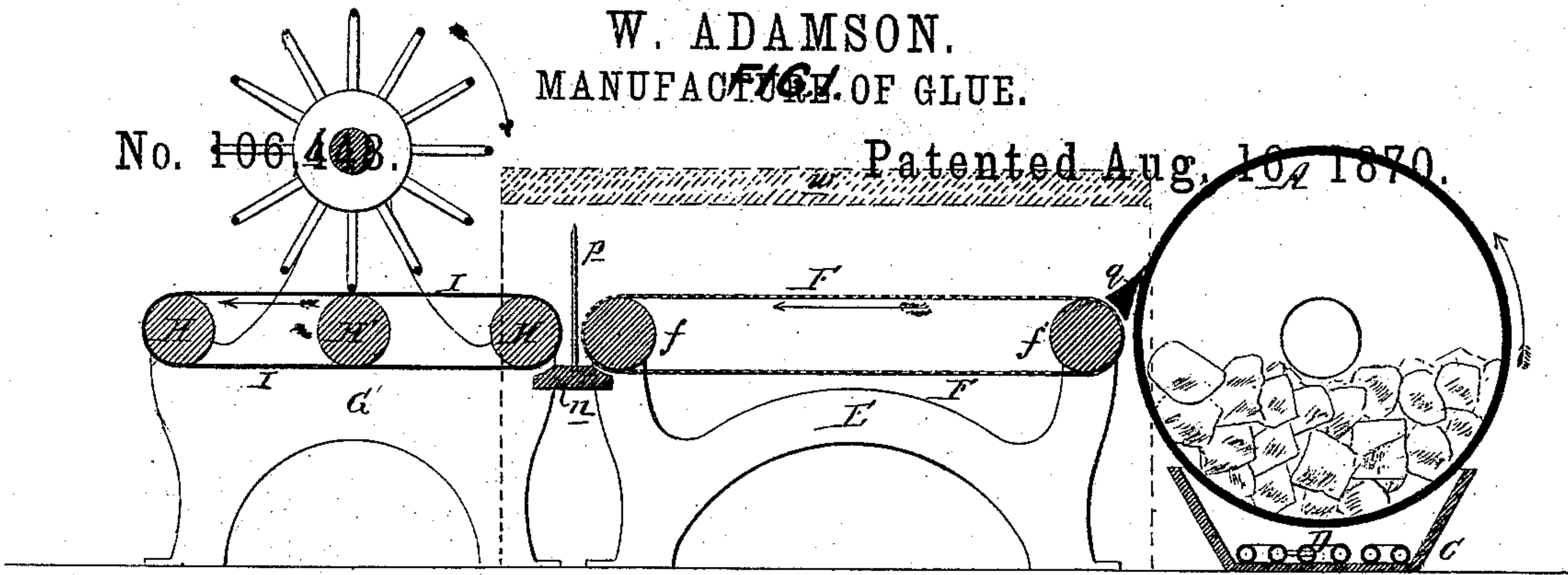


FIG. 2.

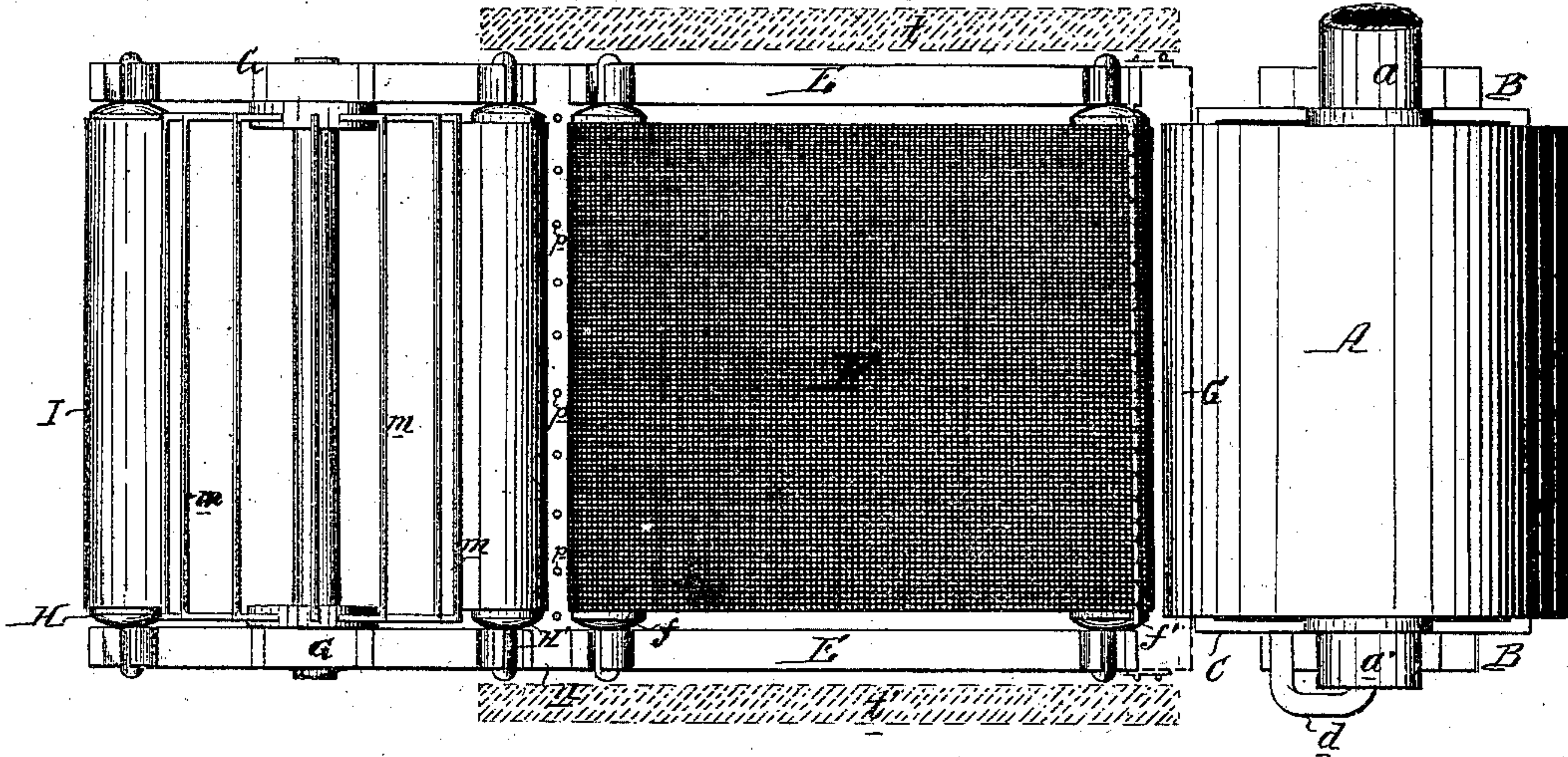


FIG. 3.

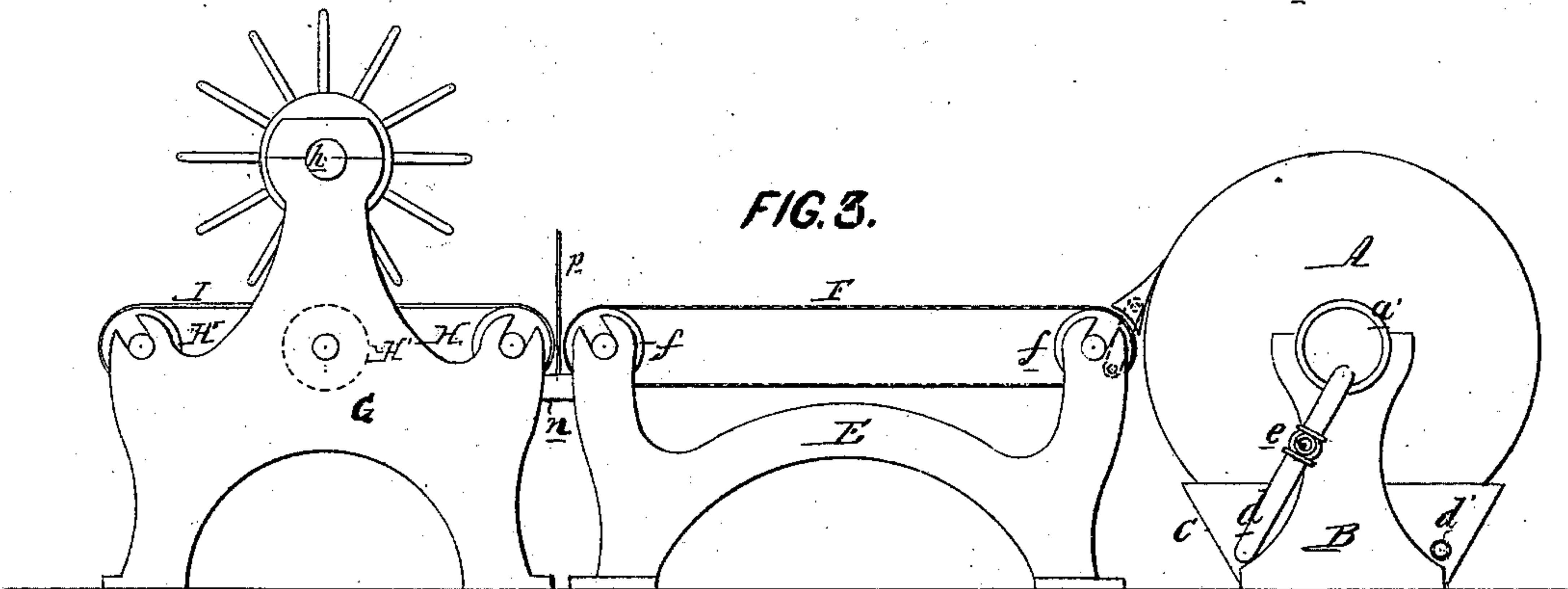
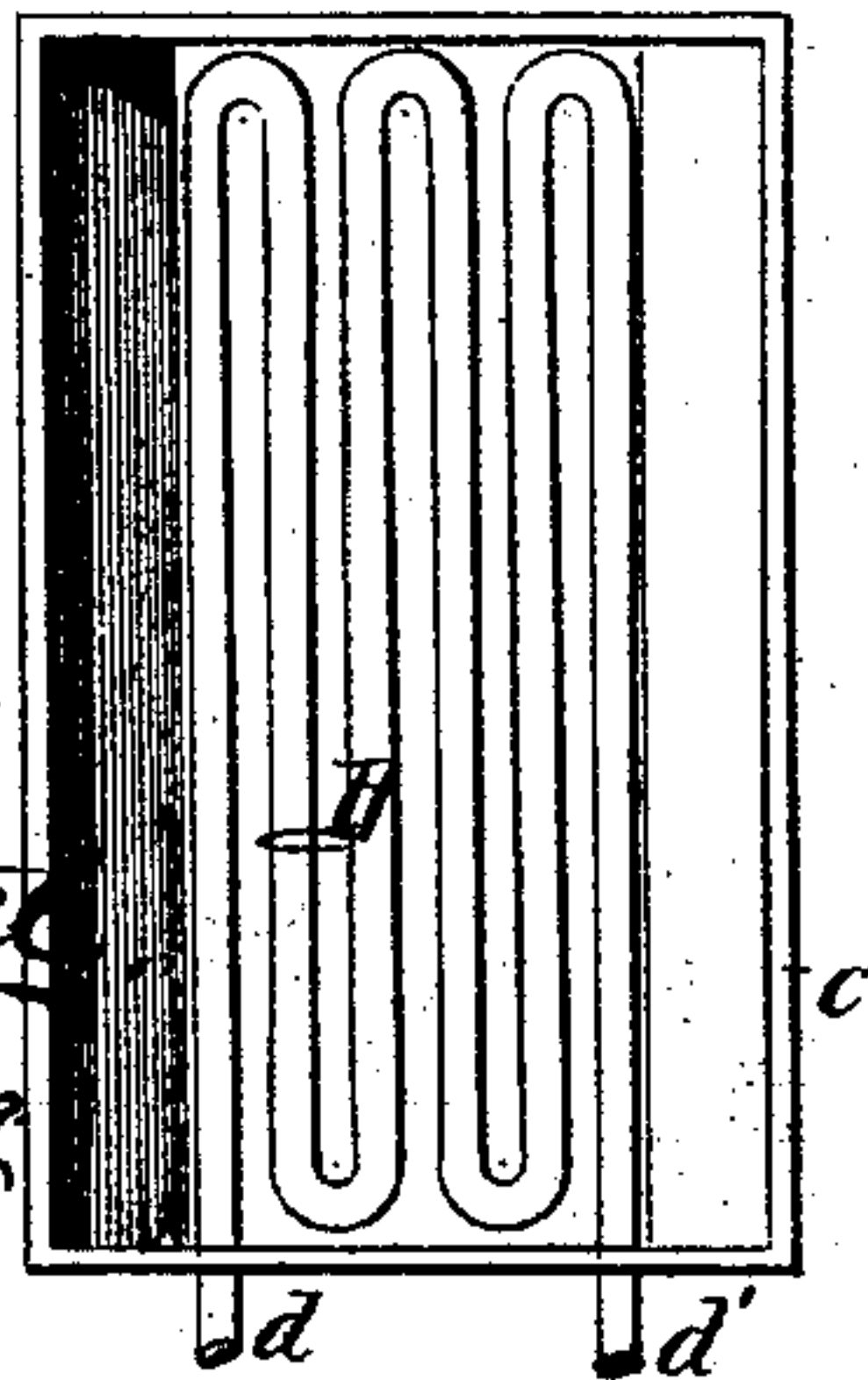


FIG. 4.



WITNESSES

Wm. A. Steel
Jno. B. Harding

William Adamson
by his Atty.
Howe and Son

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FIG. 5.

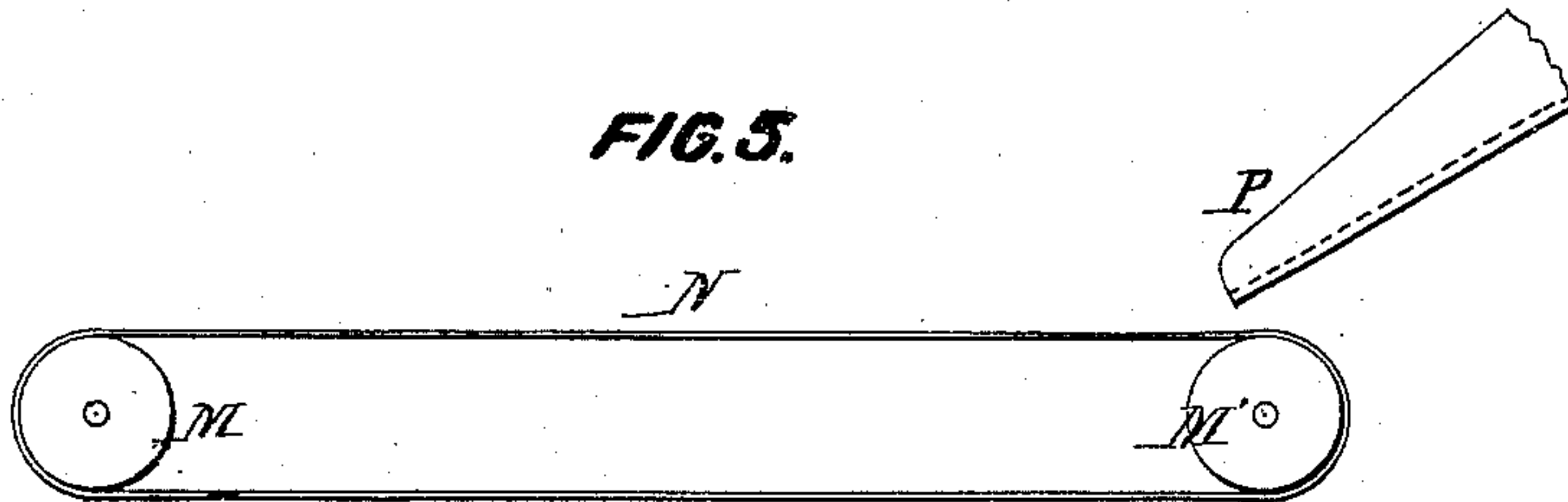
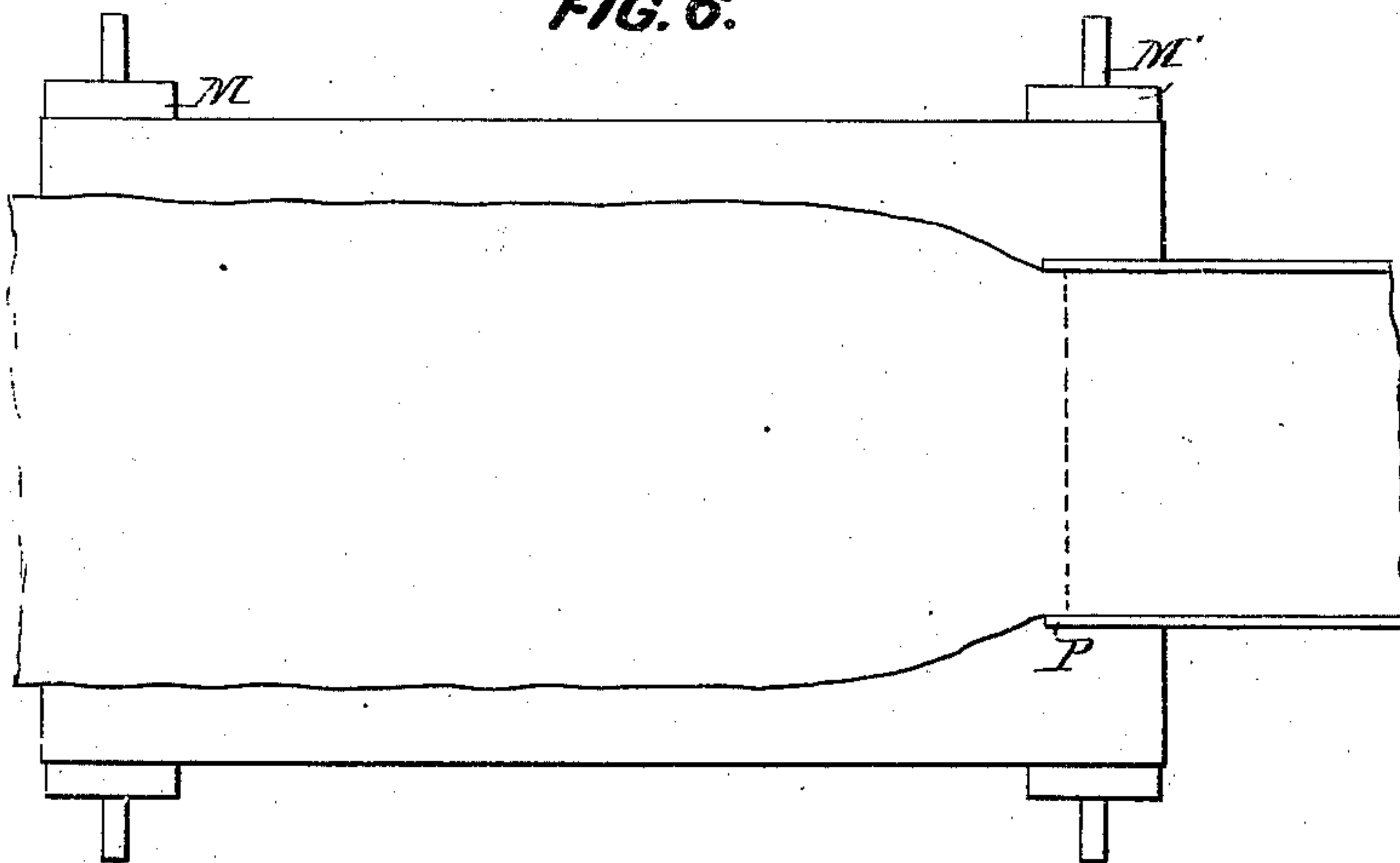


FIG. 6.



WITNESSES.

Wm. A. Steel.
Jos. B. Harding.

William Adamson
by his Atty
Howson and son

United States Patent Office.

WILLIAM ADAMSON, OF PHILADELPHIA, PENNSYLVANIA.

Letters Patent No. 106,448, dated August 16, 1870.

IMPROVEMENT IN THE MANUFACTURE OF GLUE.

The Schedule referred to in these Letters Patent and making part of the same.

I, WILLIAM ADAMSON, of Philadelphia, county of Philadelphia, State of Pennsylvania, have invented an Improvement in the Manufacture of Glue, and apparatus for the same, of which the following is a specification.

Nature and Object of the Invention.

My invention consists in the production of sheets of gelatinized size, by causing fluid or semi-fluid size to traverse either with a cylinder or with an endless apron while exposed to the air.

My invention further consists of certain mechanism and apparatus for forming the said sheets, cooling the size, hardening the sheets, and severing the same, the said mechanism and apparatus being too fully explained hereafter to need a preliminary explanation.

The object of my invention is, economy in the manufacture of glue, by substituting for the manipulative operations heretofore practiced automatic labor-saving processes and mechanism.

Description of the Accompanying Drawing.

Figure 1, Drawing No. 1, is a sectional elevation of my apparatus for producing sheets of gelatinized size, preparatory to converting the same into glue by drying;

Figure 2, a plan view of the apparatus;

Figure 3, a side view;

Figure 4, a plan view of a part of the apparatus; and

Figures 5 and 6, Drawing No. 2, illustrate a modification of my invention.

General Description.

A is a hollow cylinder, the tubular journals *a* and *a'* of which are caused to revolve in suitable standards or frames B B. Beneath this cylinder is a trough, on the bottom of which is placed a pipe, D, arranged in the manner shown in fig. 4, or in coils, or in any other manner which will insure the exposure of as much pipe surface as is possible or convenient to the contents of the trough.

Both ends, *d* and *d'*, of this pipe project through one end of the trough, the end *d* being continued through the tubular journal *a'* of the cylinder A, and so far into the interior of the latter as to extend nearly to the bottom of the cylinder. This continuation, *d*, of the pipe D, should be furnished with a cock, *e*, and the continuation, *d'*, of the said pipe D, should communicate with a pump or other exhausting apparatus, which it has not been deemed necessary to illustrate in the drawing.

In suitable frames, E, turn two rollers, *f f'*, round which passes an endless apron, F, of wire gauze, the

roller *f'* being so situated that the apron traverses as near to the cylinder A as possible without being in absolute contact with it.

In frames G G, arranged in line with the frames E E, revolve three rollers, H, H, and H', and round the two former rollers passes an endless apron, I, of suitable material, and directly above the center roller and the said frames G G turns a shaft, *h*, in which are two disks with radial arms, one disk near each end of the shaft, the arms of one disk being connected to those of the opposite disk by wires *m m*, for a purpose described hereafter.

Between the rollers H and *f* is a cross-bar, *n*, from which project vertical wires *p*, arranged at equal distances apart, as shown in fig. 2.

The cylinder A is partially filled with salt and ice, or other freezing mixture, and is caused to revolve slowly in the direction of the arrow, while the endless aprons F and I are caused to traverse in the direction of their arrows at the same speed as that of the circumference of the cylinder A, the shaft *h*, with its wires *m m*, also revolving in the direction pointed out.

The size to be converted into glue is introduced while in a fluid condition into the trough C, in which the cylinder A revolves. The size adheres to the cool surface of the cylinder, and is carried round by the same, until it arrives at the endless apron F, onto which it passes in the condition of a broad, continuous, and gelatinized sheet, the cool surface of the cylinder having reduced it to this condition.

To facilitate the removal of this sheet from the cylinder, a knife, *q*, may be introduced at the point shown in fig. 1, this knife being so formed and situated as to direct the sheet onto the endless apron F, by which it is carried to the vertical wires *p*, which cut the sheet into strips, the latter passing onto the endless apron I, and beneath the revolving wires *m*, which sever the strips transversely.

The square strips of gelatinized size thus produced are now in a condition to be placed on the usual net, and subjected to that hardening process which converts them into glue.

The old mode of obtaining these desired thin strips of gelatinized size was to first cast the hot liquid size into long troughs, and after it was reduced, by cooling, to a proper condition, the gelatinized size was cut into slabs, and these were removed from the trough and cut by wires into the required strips, all these operations being performed by manual labor.

All that is necessary to demonstrate the importance of my invention as a labor-saving process is to compare it with the old mode referred to.

It is important that the size contained in the trough should be maintained as cool as possible.

In order to do this I cause the ice-water to be withdrawn from the interior of the cylinder A, through the pipe *d*, thence through the zigzag pipe D, in the bottom of the trough, and thence through the pipe *d'*, to any suitable exhausting mechanism. The size in the trough is thus exposed to the cool surface of the pipe D.

In order that the sheet of size, as it is carried by the endless apron F, may be hardened as fast as possible, and reduced to an appropriate condition for being severed by the wires, I, in some cases, cover the said apron with a box, of which the dotted lines *t* and *t'*, fig. 2, represent the sides, and the dotted line *n*, fig. 1, represents the top.

I introduce a blast of cold air into this box, beneath the apron, through the meshes of which the air passes to the sheet of gelatinized size, and, hardening the same, reduces it to the best condition for being cut by the wires *p*.

It may be remarked here that the surface of the cylinder A should be perfectly smooth; it may, for instance, be made of iron or copper, or tinned plate, or have an enameled surface.

The main feature of my invention, namely, the formation of a continuous sheet of gelatinized size, may be carried into effect without the aid of the roller A.

In drawing No. 2 are two diagrams illustrating modified apparatus for effecting this purpose, and in these diagrams, M and M' represent two rollers, round which passes, in the direction of the arrow, the endless apron N.

Above the roller M' is a spout, P, down which partially gelatinized or semi-fluid size is caused to flow onto the apron, on which the size spreads laterally, thus forming a sheet of size which, by the time it reaches the roller M, if the apron be long enough, will be sufficiently gelatinized to be cut by wires.

The apron should be made of a rubber fabric, or of oil-cloth, or of other textile fabric, sized and polished, or enameled.

Claims.

1. The process, substantially as described, of producing a continuous sheet of gelatine, that is to say, passing the size in a wide continuous stream onto a traversing band, and there hardening, or partially hardening, the same.
2. The process of producing a continuous sheet of gelatine by coating the surface of a cylinder, maintained at a low temperature, with size, and removing the latter as it solidifies, substantially as described.
3. The combination with a revolving cylinder, A, containing a freezing mixture, of a trough or vessel, C, containing size.
4. Cooling pipes D, arranged in the trough C, in combination with any suitable exhausting apparatus, by which the ice-water in the cylinder may be caused to circulate through the said pipes D.
5. The combination of the cylinder A with an endless apron, F, of wire gauze.
6. The knife *g*, arranged in respect to the roller *f'*, and apron F, substantially as described.
7. The combination of the said endless apron F and wires *p*.
8. The combination of the rotating wires *m m* with the endless apron I.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WM. ADAMSON.

Witnesses:

WM. A. STEEL,
W. J. R. DELANY.