No. 682,569. Patented Sept. 10, 1901.

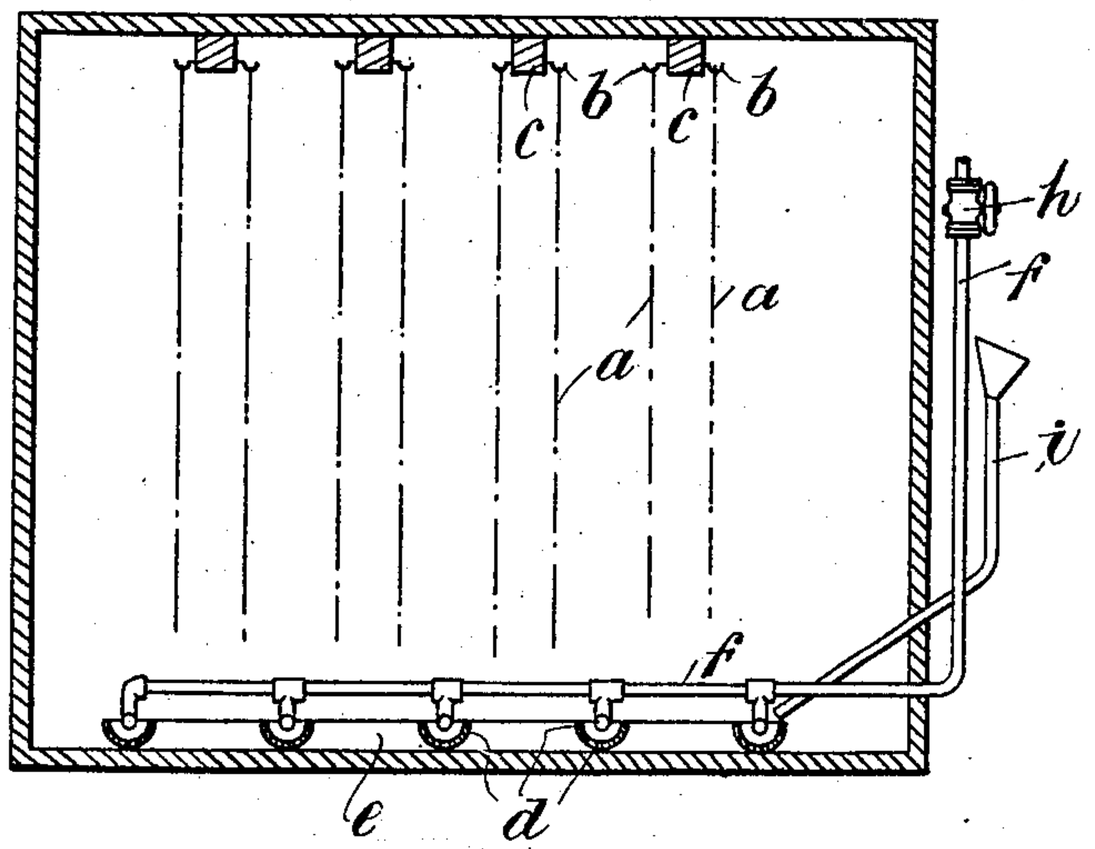
H. R. RICHES.

PROCESS OF REMOVING HAIR, WOOL, FUR, OR THE LIKE FROM HIDES OR SKINS.

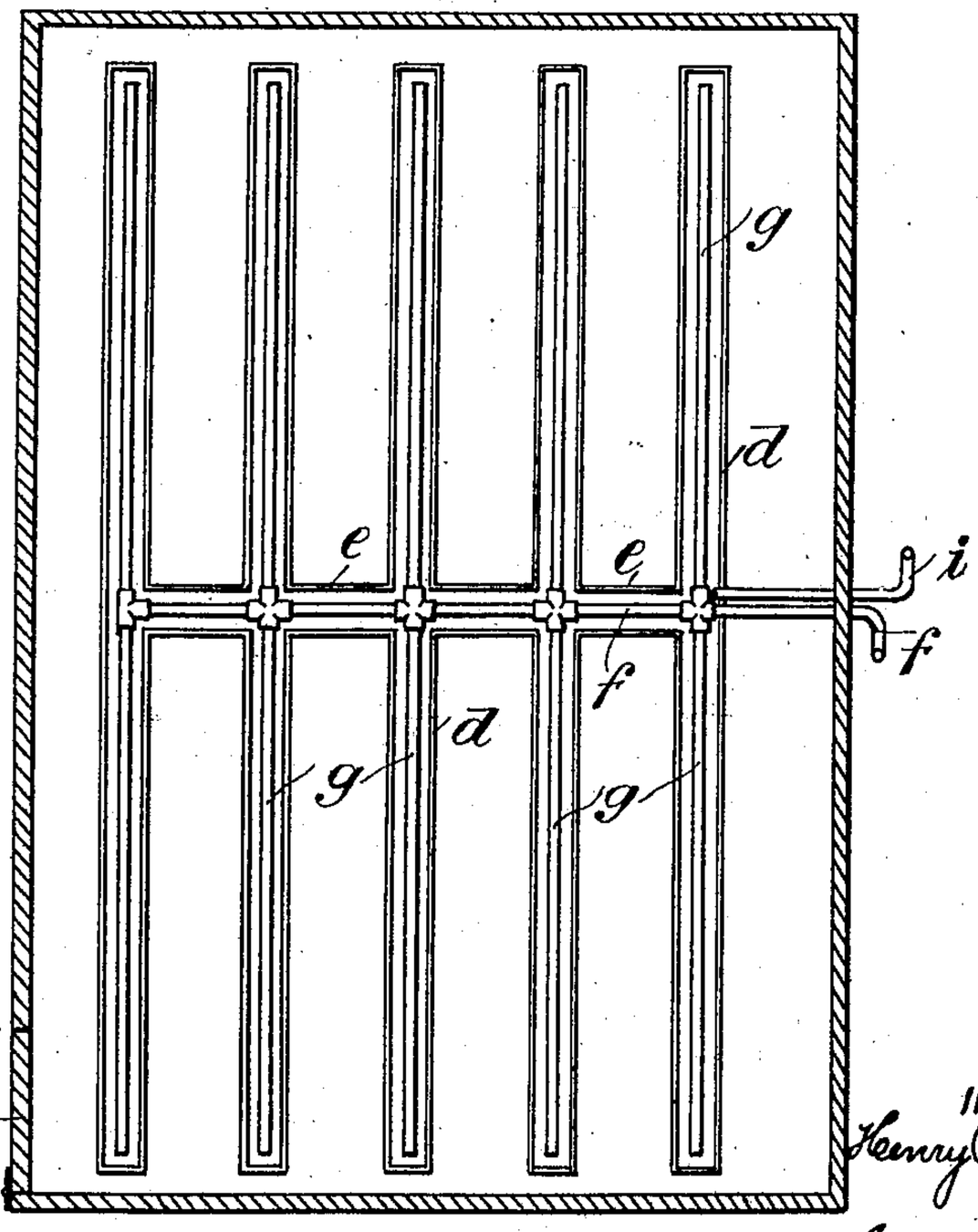
(Application filed July 2, 1901.)

(No Model.) 2 Sheets—Sheet 1.

—FIG. 1.—



—FIG. 2.—



WITNESSES:
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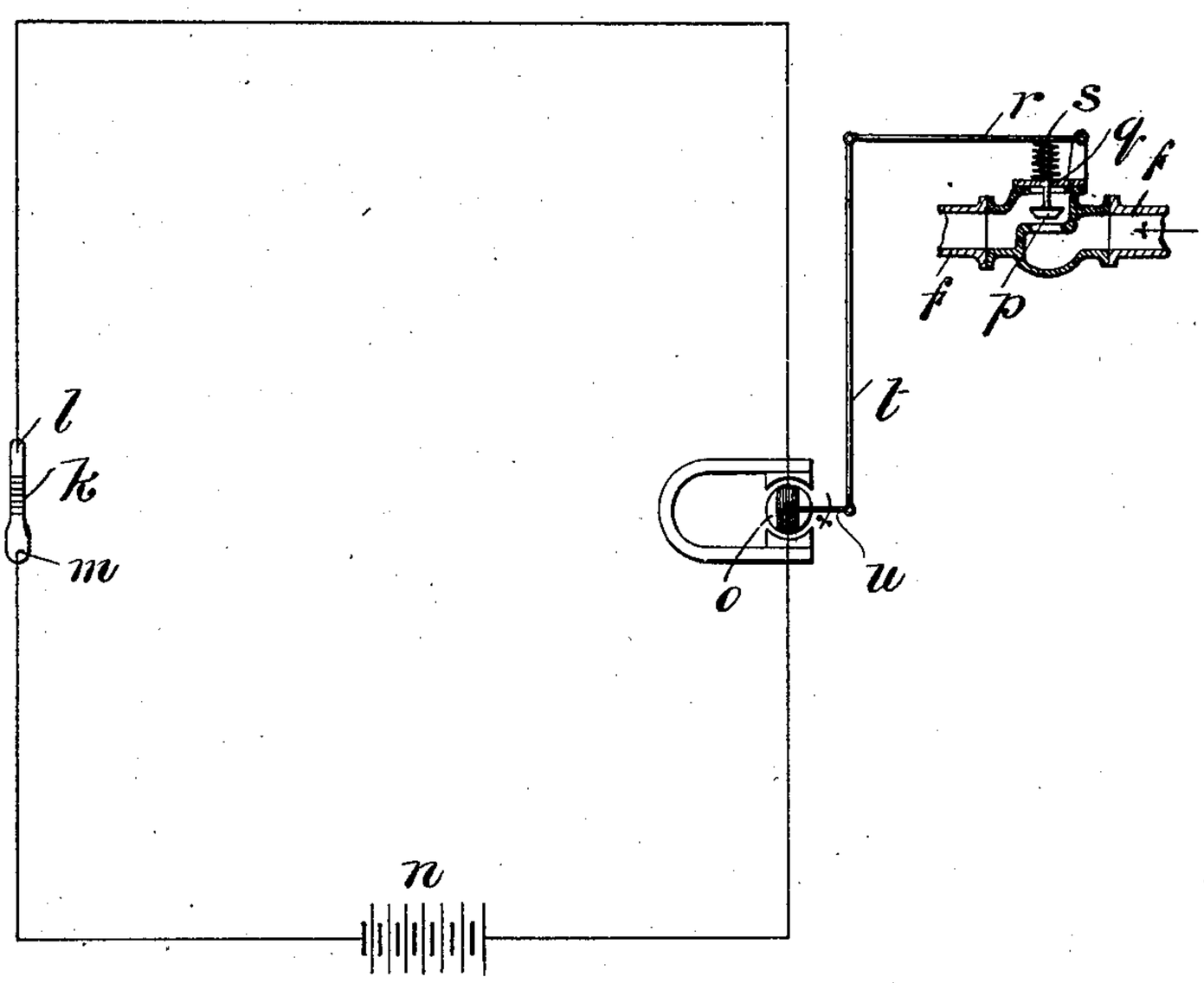

FIG. 3.

WITNESSES
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UNITED STATES PATENT OFFICE.

HENRY ROBERT RICHES, OF CHESHUNT, ENGLAND, ASSIGNOR TO WOOL, HIDE & SKIN SYNDICATE, LIMITED, OF SAME PLACE.

PROCESS OF REMOVING HAIR, WOOL, FUR, OR THE LIKE FROM HIDES OR SKINS.

SPECIFICATION forming part of Letters Patent No. 682,569, dated September 10, 1901.

Application filed July 2, 1901. Serial No. 66,815. (No specimens.)

To all whom it may concern:

Be it known that I, HENRY ROBERT RICHES, leather-dresser, of the Wool, Hide & Skin Syndicate, Limited, a subject of the King of Great Britain and Ireland, residing at Windmill Lane, Cheshunt, in the county of Herts, England, have invented a certain new and useful Improved Process of Removing Hair, Wool, Fur, or the Like from Hides and Skins, (for which I have made application for Letters Patent in Great Britain, No. 14,727, bearing date August 16, 1900,) of which the following is a specification.

This invention relates to an improved process for treating raw hides and skins, the object being to enable the skins to be treated in a raw condition, so as to remove the hair, wool, or fur for enabling the same to be used commercially, while leaving the skin in a condition for subsequent treatment for the production of leather and the like.

My invention consists in subjecting the raw skins to the combined action of heat and ammonia-gas, thereby loosening the hair, wool, or fur, so that it can be readily pulled or scraped from the skin in the usual manner.

In carrying my invention into effect when operating upon skins or hides I first soak the same in clear water to remove the salt or other preservative and to soften them in the usual manner. After they are thus softened I break them over a beam with the fleshing-knife in the usual manner on the flesh side to open as far as possible the pores of the skins. After the pores are thus opened and while the skins are in their moist condition I transfer them to the dehairing room or chamber. The skins are suspended from hooks or like supports attached to the rafters or other suitable parts of the chamber, and while thus suspended they are submitted to the action of ammonia-gas for a period, the length of time being varied to suit the class or thickness of the skins to be operated upon. I maintain the temperature of the chamber at or about 80° Fahrenheit during the operation. The ammonia-gas may be generated exterior to the chamber in any ordinary manner from ammonium sulfate or ammonium chlorid and lime and introduced into the chamber by a suitable pipe or conduit, or I may generate the ammonia from the materials mentioned within the chamber itself. In either case, however, the arrangements should be such that the ammonia should be as nearly as possible equally distributed to all the skins within the chamber.

In the accompanying drawings, which illustrate an arrangement of a chamber which I employ for the treatment of sheepskins, Figure 1 is a sectional elevation of the chamber, and Fig. 2 is a sectional plan showing the ammonia-distributing channels or conduits. Fig. 3 is a diagrammatic view of an apparatus for automatically controlling the temperature within the chamber.

Referring to Figs. 1 and 2, the skins *a*, Fig. 1, are suspended from hooks *b*, fixed to the rafters *c*, which extend along the length of the chamber. Upon the floor of the chamber I provide a number of distributing-channels *d*, which may be constructed of semicircular or other suitable form. These channels are in free communication with and branch out on opposite sides of a central channel *e*, extending across the chamber. The channels *d* are closed at their outer ends and extend along the length of the room parallel with the rafters *c*, so that each channel distributes to two rows of skins, one of which is situated on each of two adjacent rafters. Along the central channel *e* I arrange a steam-pipe *f*, which passes through the wall of the chamber and conveys steam from a boiler situated in any convenient position. From this central pipe I provide a number of branch pipes *g*, each of which is slit or perforated on its under side, so that it discharges steam into the channel *d* along its whole length. A stop-valve *h* is fitted on the steam-pipe *f*, by means of which the steam-supply can be controlled from outside of the chamber. I also provide a filling-tube *i*, through which the ammonium chlorid or sulfate and lime are poured into the channel *d*. After the skins have been hung the door *j* of the chamber is closed, so as to prevent access of air to the chamber, and steam is turned on to raise the temperature of the chamber up to about 80° Fahrenheit, as registered by means of a thermometer which is hung inside of the room, so that it can be observed through

a window from the outside. The temperature is maintained at or about this point by continuing to pass in steam for about two hours in order to thoroughly heat up the skins, then the ammonium chlorid or sulfate and lime are supplied separately to the channels *d* through the pipe *i*, the ammonium salt in the form of a solution and the lime as milk of lime. The solutions become distributed through all the channels *d*, and the steam which passes from the pipes *f* causes the ammonia to be rapidly generated and distributed among the skins in the chamber. The treatment with heated aqueous vapor and ammonia is continued until the hair or wool on the skins can be pulled off easily by hand when the chamber is discharged, the time during which the treatment is continued depending on the class and thickness of the skins. The skins after depilation are tanned and dressed or tawed in the ordinary manner.

The preliminary steam-heating of the skins is unnecessary during the hot season of the year, in which the rise in temperature of the skins after washing may be effected by exposure to the atmosphere.

According to one method of working in a chamber of about thirty feet by ten feet by six feet internal dimensions, suitable for treatment of about one hundred and fifty skins, the skins are hung in the chamber, which is at approximately atmospheric temperature. The chamber is then closed and the skins left to themselves for about twelve hours, after which they are subjected to the treatment with steam and ammonia-gas for a further period of about five hours. During the first four hours of the operation six pounds of ammonium sulfate and three pounds of slaked lime are employed. Of this total charge four pounds of the ammonium sulfate and two pounds of lime are added to the channels in three equal portions at intervals during the first two hours and the remainder of the charge during the succeeding two hours, the chamber being left to itself for the last hour of the treatment. The temperature of the chamber is gradually raised from 80° Fahrenheit at the beginning to 100° Fahrenheit at the end of the process by regulating the steam-supply. The higher limit of 100° Fahrenheit is preferably not exceeded; otherwise the skins are liable to be damaged. I may provide an automatic device for regulating the temperature of the chamber, so that it does not rise above the limit referred to. According to one arrangement I may employ an ordinary thermostat-tube *k*, Fig. 3, containing a suitable liquid or mercury, which tube I arrange inside of the chamber. The terminal contacts *l m* of this thermostat are connected in circuit with an electric battery *n* and the coils on the armature *o* of a magneto-electric machine. *p* is a valve which controls the steam-supply through the pipe *f*. The stem *q* of this valve bears against a lever *r*, pivoted on the valve-casting, and the outer end of this lever *r* is connected by a link *t* to an arm *u*, which is fixed to the shaft of the armature *o*. When the thermostat-circuit is closed, the armature *o* rotates in the direction indicated by the arrow, so as to cause the lever *r* to force the valve *p* onto its seat against the pressure of a spring *s*. The thermostat-contacts are so situated that the circuit is closed automatically by the liquid when the temperature of the chamber reaches about 100° Fahrenheit. I employ any well-known system for mechanically controlling the temperature or for operating the steam-valve.

Sheepskins treated according to the above-described process can be easily dewooled by hand, and the wool is not impaired in quality, as in the ordinary treatment with lime. I have illustrated my process as applied to sheepskins; but it is obvious that it is equally applicable to all kinds of skins, hides, and furs. It is further obvious that I may modify the method of carrying out the process to suit the varying conditions which may arise when treating various kinds and quantities of skins.

It will be seen that my improved process enables the depilation of skins to be effected in an extremely short time compared to that which the ordinary liming process occupies.

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

The herein-described process of dehairing skins, which consists in washing the skins, mechanically breaking the same in moist condition, subjecting the skins while still moist to the combined action of heated ammonia-gas and a heated aqueous vapor, and then mechanically removing the hair from the hide, substantially as set forth.

In witness whereof I have hereunto set my hand in presence of two witnesses.

HENRY ROBERT RICHES.

Witnesses:

ALBERT G. PARKER,

JOHN GRAY.