over the ground, as a protection to him.

On the whole matter I think the conclusion at which the Sheriff-Substitute has arrived is the right one, and that the damages he has allowed ought not to be interfered with.

LORD YOUNG—I am of the same opinion, and very much upon the same grounds. It was maintained by the pursuers that it was the duty of the defenders under the provisions of the Coal Mines Regulation Act 1887 to have had this machinery fenced. I put the question to the defenders' counsel whether he disputed that rule 31 of that Act applied, and he said that he did not dispute it. Therefore we may take it that the machinery ought to have been fenced, and if the fence required to be taken off for a temporary purpose the gap ought in my opinion to have been watched during the time the fence was off. This piece of machinery was of such a nature that according to the rules of our common law it ought to have been fenced so that no one should stray in and injure himself as this child did.

On this occasion it was left unfenced for a short time and an accident happened. I think that according to the rule of our law responsibility lies upon the defenders in such circumstances. Upon the evidence it is clear that this engineman was wrong in going away from the place leaving this machinery unfenced, and that it was from this fault that the accident occurred.

With respect to the plea in defence that the child was a trespasser I agree in that also with your Lordship. The child's father was one of the workers in the defenders' service, and rented a cottage from the defenders near this machinery, and the children of the cottages near naturally used the waste piece of ground between the machinery and their homes to play on, so that it is not accurate to describe the child as a trespasser. The child was lawfully there. Of course neither the child nor anyone else ought to have entered inside the place where the fence ought to have been, but the purpose of a fence is just to prevent people trespassing into dangerous places.

I think there is liability upon the defenders, *prima facie*, because the accident occurred from the absence of the fence, and further that the contributory negligence founded on by them is not proved.

LORD TRAYNER — I entertain serious doubts of the soundness of the judgment appealed against, and which your Lordships propose to affirm, having regard to what I think has previously been decided in cases very like the present. I think it, however, possible to take a view of the special circumstances of this case as brought out in the evidence on which the pursuer may be entitled to judgment. I refer especially to the fact that the dangerous machinery which caused the death of the child was —although within the defenders' premises— so near to a place where the defenders' workmen and their children were entitled to be, that a duty was imposed on the defenders to have their works at that place properly fenced, so that even strayers should not be exposed to the danger or risk of injury. It was the insufficiency or want of fencing at this place which led to the death of the child in question. I do not therefore dissent from the proposed judgment although I do not concur in all the grounds assigned for it.

I am not prepared to affirm that the defenders can be found liable in this action on the ground that they were in fault or failed in any duty incumbent on them on account of their machinery not being fenced in accordance with the provisions of the Act 50 and 51 Vict. cap. 58. The provisions of the Act referred to are confined, according to my present opinion, to precautions necessary for the safety of persons employed in the works and such persons only.

LORD RUTHERFURD CLARK was absent.

The Court dismissed the appeal.

Counsel for the Appellants—Wilson—F.T. Cooper. Agents—Drummond & Reid, W.S.

Counsel for the Respondents—Daniell. Agent—James F. Macdonald, S.S.C.

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*Wednesday, July* 19.

## SECOND DIVISION.

[Lord Low, Ordinary.

## MURCHLAND *v.* NICHOLSON AND GRAY.

*Patent—Milking Machine—Whether Competing Invention a Mechanical Equivalent—Anticipation.*

A patent was granted in 1889 for "improvements in apparatus for milking cows." The milk was drawn off by indiarubber pipes, in which a vacuum was set up by an exhaust pump. Automatic regulation of the extent of vacuum was attained by placing in communication with the pipes a tube open at the bottom, and resting in a vessel of water, so adjusted that when the vacuum drew up into the tube a column of water of a certain height, air found its way up the tube, and thus prevented the vacuum from becoming excessive.

The specification claimed, in the fifth place, a milk receptacle, which consisted of a can with nozzles to which the indiarubber tubes from the cow and from the exhaust pump were fixed, with a pane of glass let into the lid for inspection of the interior, and with a tap and branch for drawing off the milk.

In a patent of 1891 for "improvements in milking machines," automatic regulation of the vacuum was ob-

tained by using an ordinary valve, with a lever held down by a weight, the amount of vacuum being regulated by the position of the weight on the lever. The weight held the valve against the external pressure, and prevented air from entering and diminishing the vacuum until a certain vacuum had been established by the exhaust pump.

The patentee of 1889 sought interdict against the patentee of 1891, on the ground that the respondents' weighted valve was simply a mechanical equivalent of his water valve, and consequently was an infringement of his patent. The respondents denied the infringement, and maintained besides that the complainer's fifth claim was bad, because anticipated by a prior patent of 1863, which described a milk reservoir practically the same as the complainer's receptacle, the only difference being that the reservoir of 1863 had a pane of glass on the side instead of on the lid, and that it had not a moveable lid, but a bung.

*Held* that the complainer's claim for the milk receptacle was invalid, and accordingly that the whole patent fell.

*Opinion per* Lord Justice-Clerk that the respondents' process was only a mechanical equivalent of the complainer's invention.

*Opinion per* Lord Low (Ordinary) *contra.*

William Murchland, plumber, Kilmarnock, sought to interdict Stewart Nicholson, farmer, Kirkcudbright, and John Gray, Stranraer, from infringing his patent granted 27th September 1889, for "improvements in apparatus for milking cows."

The specification was in these terms—"My said invention has for its object the constructing and combining of apparatus for milking cows in an improved manner, and so as whilst operating more naturally and less roughly to be more economical than the ordinary milking process. In carrying out my invention suction is applied to the cow's teats, but a special feature of my arrangements is that the milk is not drawn through a pump. According to another important feature of my invention the degree of suction or vacuum which is used is regulated by a column of liquid, which liquid may in some cases be the cow's milk itself; and although pumping or equivalent means is employed to produce the suction, being in some cases required only when starting the milking operation, any increase in the pumping action beyond what is necessary and corresponds to the column of liquid, merely draws air up through the column without materially affecting the degree of vacuum acting inside the apparatus. I believe that a column of liquid of a vertical length of about 12 feet is in most cases sufficient, but the length may be varied if found desirable in any case, and with stiff or dour cows a greater suction may be applied to make them yield their milk freely."

The invention was thus described in the evidence of Edmund Hunt, the complainer's patent-agent—"The complainer's apparatus consists of a combination of parts suited for operating upon a large number of cows at a time. It operates by suction. There is a suction-producing apparatus, an apparatus producing a vacuum or partial vacuum, and that vacuum acts through main pipes and branch pipes, each of which branches is connected when required, to a receptacle or special milk pail for a particular cow. The vacuum is produced by a pump, which may be worked by hand or otherwise. For a small establishment it is moderate labour to work it by hand; for a large establishment you require power. In the ordinary action of a pump, if you go on pumping the vacuum goes on increasing until it approximates to a complete vacuum, which is equal to about 15 lbs. pressure to the square inch. I cannot say that I have actually personally ascertained it, but it is my belief that a suction of anything like 15 lbs. of atmosphere to the square inch is very injurious to a cow. That would be very much greater than the suction of a calf, and the complainer set himself to devise an apparatus by which the suction, that is, the vacuum, should not be allowed to get beyond a certain degree. After various trials and observations, and spending a great deal of time on the matter, he came to the conclusion that a vacuum, equal to about 12 feet of a column of liquid, or between 5 and 6 lbs. was about the best, all things considered, and was such as would not produce injury to the cows, however long continued. To illustrate what I mean, suppose this glass tube which I have in my hand is 12 feet long, and that it contains a column of liquid, that liquid column has a certain weight per inch of area. Now if the upper part of the column is connected with a closed vessel in which there is air and the air has been pumped, the atmosphere acting in the opposite direction is balanced by the weight of that column of liquid, plus the pressure of the air inside, consequently there will be a balance unless the air inside be reduced in proportion. The pressure of the air inside is just the difference between the weight of the column of liquid per inch of area as compared with the weight of the atmosphere per inch of area. If you have a complete vacuum the atmosphere will support a column of water 32 feet high. To come back to the complainer's apparatns, I have explained that the vacuum was produced by means of a pump. No. 26 of process, which I now produce, is a small model of the apparatus showing the different parts as arranged in a byre. The pump is connected with a closed upper tank at the top of the liquid column, and it is also connected by means of main pipes with branch pipes to the different stalls. The closed upper vessel is connected by means of a pipe about 12 feet long with an open vessel at the bottom. The bottom of that pipe is open and dips into water in the lower tank. Now, if you put into the lower tank the proper amount of water you just fill the pipe. From the

main pipes which go along the walls there are leaders or branch pipes going down to the stalls. The branches are connected to stop-cocks on the main pipe. In the model the branch is shown in connection with a milk receptacle. This receptacle has a top fitted with indiarubber, and when the apparatus is going to be used the rubber is wetted, and then when suction is applied and the air inside exhausted, the top is kept on by atmospheric pressure. The top is made of glass so that it can be seen whether the milk is flowing or not. Besides the branch pipe connecting the suction apparatus to the receptacle, there are four flexible tubes which come from the receptacle and terminate at the teat-cups, which are applied to the teats on the cow's udder. These teat-cups are of special construction, to a certain extent as described in complainer's specification, but with some little improvements which he has made since. The milk vessel is suspended over the back of the cow by means of a strap, so that if the cow moves about the receptacle moves with it. Assuming that the apparatus is all *in situ* ready for operating, if pumping is begun and continued so as to produce a greater degree of suction than corresponds to the liquid column the air just passes through, because the liquid in the lower tank gets depressed below the mouth of the pipe, and air enters and prevents the suction increasing beyond a predetermined amount. (Q) So that you can never get the chamber in the top to more than that amount of vacuum which you have said is the proper amount for drawing the milk from the cow?—(A) That is determined to a certain extent within a small range by the quantity of water you put in the lower tank—you may vary that a little, and there is an advantage in having a certain amount of water in the upper tank, because when you are fitting on the connecting receptacle, the air in the receptable combining with the air in the pipes, tends to reduce the amount of suction, and the water in the upper vessel just sinks to a corresponding extent, and closing the suction brings it back to its former amount. You can also see by the height of the water in the lower tank the exact state of your vacuum. If the pumping is being done by a worker he does not require to pump continuously, he may pump a short time, and then when he sees the water rising in the lower tank he sees that he must begin to pump again. That is a great convenience in practice. The lower tank acts practically as an automatic vacuum guage. When the milk is drawn from the teat-cups it falls into the receptacle, and does not enter the suction tubes at all. It does not pass through any part of the pump. By that means, besides the obvious advantage of cleanliness, you can also keep the milk of each particular cow separate from the milk of others, by the use of separate receptacles. The glass top to the receptacle enables the attendant to see when the milk ceases to flow from a particular cow, and then by turning a stop-cock he can stop the milking operation, so far as that particular cow is concerned. The teat-cup is a metal vessel with an internal rubber cup or tube with perforations in it, the upper rim of which bears round the neck of the teat. The thin lip or apparent washer on the teat-cup is a little improvement upon the teat-cup as described in the complainer's specification. Its advantage is softness, enabling the teat-cup to adapt itself more exactly to the teat."

The specification by drawings illustrated the combination and process above explained, and proceeded — "The sucking action or exhaustion may be produced in any suitable known way, provided that the degree of vacuum is regulated by means of a column of liquid of suitable length, whereby the vacuum is prevented from becoming excessive. For example, the upper tank may be nearly filled with water by pumping, or by gravitation where a supply by gravitation is available, the column pipe being closed whilst filling the tank, and provision being made for the escape of air. Then when the apparatus is to operate, any openings by which air might re-enter being closed, the stopcock on the pipe is opened, and the water flowing down that pipe produces the required sucking action. In many cases it will be convenient to provide two upper tanks with connecting pipes and stopcocks arranged so that one may be filled whilst the other is in action and being emptied. Apparatus like a gas-holder may be conveniently applied for exhausting, the interior of the bell being connected to the milking-pipes, whilst a weight attached to a rope passing over a pulley draws up the bell and produces the required vacuum, and will maintain it in the event of air leaking into the pipes. This arrangement may be used in combination with the regulating liquid column; or if the weight used to draw up the bell is carefully adjusted so as not to produce a degree of vacuum exceeding what is considered sufficient and best, the liquid column may be dispensed with. Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—1. The combination of parts constituting the modification of my improved milking apparatus substantially as hereinbefore described with reference to figures 1 and 2 of the accompanying drawings. 2. The combination of parts constituting the modification of my improved milking apparatus substantially as hereinbefore described with reference to figure 7 of the accompanying drawings. 3. In milking apparatus, the connecting of a pipe from air-exhausting apparatus to a milk receptacle or collector which is separately connected to the teat cups, combined with the application of a liquid column to regulate the degree of exhaustion, substantially as hereinbefore described. 4. Combining with the other parts of the milking apparatus the employment of apparatus like a gas-holder, the bell of which is drawn up by a suitable weight for exhausting the air, substanti

ally as hereinbefore described. 5. The construction of milk receptacle or collector substantially as hereinbefore described with reference to figures 5 and 6 of the accompanying drawings."

The respondents' patent dated 1891 was for "Improvements in and relating to milking machines and their fittings," and they thus described their nature — "This invention has reference to and comprises a new or improved mode of and means or arrangement and combination of appliances or machines for the milking of cows, goats, or other animals, and which will be more simple, cleaner, convenient, efficient, and automatic than the appliances heretofore in use." Their apparatus was of this kind —A large hollow tank or general milk receiving vessel, preferably of cylindrical shape, was placed upon a portable wheeled "trolly" or on the ground or in a recess below it, and formed the vacuum cylinder and general milk receiving vessel and reservoir combined, or it might only be the vacuum vessel with intermediate portable milk receiving vessels for each cow, or one vessel for every two cows. There was also, as in the complainer's apparatus, a vacuum effected by means of a pump; and also, as in the complainer's, a system of main leading pipes with branches taken off to each stall for the particular animal. The pump was preferably operated by a hand-wheel and crank arrangement, or a small motor was erected near the milk vessel and connected with it by an air suction pipe "to create a partial vacuum or suction within it preferably pulsating regulated by a valve with weighted lever or spring equivalent—opening inward." The valve regulating the vacuum might be described as an inverted safety valve, that is, a small valve fitted to the air reservoir or upper tank, and constructed so as to open inwards. The valve was connected with a lever which was counterweighted and the weight was so adjusted as to allow the atmospheric pressure to open the valve whenever the degree of suction inside became less than the predetermined amount. The main pipe along the byre was underground but connected with the milk receptacles by branches and short flexible tubes. Teat-cups were fixed to the cow's teats and connected with the milk receptacles by flexible tubes. The process of milking was much the same as in the complainer's machine, but the milk was drawn from the smaller receptacles into the large receptacle first mentioned and drawn off from there by a tap. The specification then proceeded—"Having now particularly described and ascertained the nature of our said invention, and in what manner the same is to be performed, we declare that we are aware that it has been previously proposed to use in apparatus of the kind hereinbefore described vacuum pipes, a reservoir through which a vacuum is maintained by a suction pump, and having means for regulating the amount of vacuum, and we make no general claim to such arrangements, but what we claim is—1. The system or mode of and arrangement and combination of appliances or machines for the milking of cows or other like animals, comprising a main vacuum or milk and vacuum pipe or pipes and reservoir A through which a vacuum is maintained by a suction pump B, and with automatic acting vacuum shutting off main and teat branches, the milk being drawn off either into the main vacuum reservoir A or into intercepting suction isolating vessels or pails, all substantially as herein described in reference to and by way of application shown in drawings. 2. In a mechanical system of milking cows or other like animals, the fitting and use at the union joint connections to the main vacuum or vacuum and milk pipes, of vertical moving stem and stand tubes working fluid-tight and with a branch or branches leading therefrom, either to the udders of the cows or to intercepting milk isolating vacuum vessels for the purpose of placing these into or out of working connection with the main pipes and vacuum vessel and pump, substantially as herein described in reference to and by way of application shown in drawings. 3. In a mechanical system of milking cows or other like animals, the forming of the branch pipes leading from the T union couplings, or from the milk isolating intercepting vessels of an angular or curved shape for connecting an india-rubber branch pipe leading to the teat connections, so as to automatically shut off the vacuum when the teats are not in use, substantially as herein described in reference to and by way of application shown in drawings. . . 7. In a mechanical system of milking cows and other like animals, the construction and use of a portable vacuum or vacuum or milk main receiver or reservoir with safety relief valve, vacuum indicating gauge, and connecting fittings in combination with an air pump, and service pipe or pipes, substantially as herein described in reference to and shown in drawings."

The complainer contended that the use by the respondents of a valve opening inwards with a weighted lever or spring equivalent, being a mechanical equivalent of the complainer's regulating apparatus of a column of water twelve feet high, was an infringement of his patent.

The respondents denied that their invention was anticipated by the complainer's patent, which they averred was invalid in respect of want of novelty. The patents which they averred had anticipated the complainer's patent were those of Gedge, 6th January 1864, Martins in the United States of America 13th June 1883, and a German patent by Steimann dated 3rd March 1887.

The respondents pleaded—"(1) The complainer's statements are irrelevant and insufficient to support the prayer of his note. (2) In respect that the respondents have not infringed the complainer's rights, interdict ought to be refused. (3) Interdict ought to be refused in respect that the complainer's alleged patent is void, 1st, for want of novelty, and 2nd, for want of utility."

Gedge's specification was for "improved apparatus for milking." The following was the apparatus and mode of working—There was a large reservoir, on one side of which was a transparent plate bearing a graduated scale, so that the quantity of milk in the reservoir could be ascertained at any moment. Upon the top of the reservoir was fixed a pneumatic pump. The reservoir had not a lid, but a bung, which was unscrewed when it was desired to clean the vessel. A caoutchouc tube was attached to the reservoir and carried to the cow's teats, to which it was affixed by four short tubes of the same material, each fitted with a stop-cock. There was also a stop-cock close to the reservoir and another near to where the branches to the teats began to divide. When it was desired to work the machine all the stop-cocks were opened, the air exhausted by means of the pump, and a suction took place by which the milk ran into the reservoir. There was a large tap fixed in the reservoir in the opposite side to which the caoutchouc pipe was fixed, and when the required number of cows or other animals had been milked, the milk was run off by this tap into cans or other vessels. The pump required to be worked all the time of the milking, and there was no automatic regulating process.

The Lord Ordinary (Low) allowed a proof, and upon 29th November 1892 pronounced this interlocutor:—"Sustains the respondents' pleas; recals the reasons of suspension; refuses the prayer of the note, and decerns, &c.

"*Opinion.*—The complainer's patent is for 'Improvements in Apparatus for Milking Cows.' He says in the specification that his invention has for its object the constructing and combining of apparatus for milking cows in an improved manner, and so as, while operating more naturally and less roughly, to be more economical than the ordinary milking process. The patent is thus for a combination, and the first question is, whether the invention is a proper subject-matter for a patent.

"I am of opinion that that question, so far as the combination claimed is concerned, must be answered in the affirmative. No doubt a machine for milking cows by suction is not a new thing, and it may be that the various parts constituting the complainer's machine are old, but in my opinion the combination produces the desired result in a more useful and beneficial way than that in which it has ever before been accomplished. Therefore, in so far as the complainer's patent is for a combination, I do not think that it can be challenged either on the ground of want of novelty or of want of utility.

"The next question is, whether the respondents' machine is an infringement of the complainer's patent.

"I think that the most important feature in the complainer's invention is the automatic regulation of the force of the suction which is applied to the cow's teats. In milking machines prior to the complainer's there was no automatic means of regulating the vacuum or degree of suction, and the consequence was that injury to the cow, from excessive suction being exerted upon the teats, was apt to result. The complainer's method of regulating the vacuum or degree of suction is by means of a column of liquid of a suitable length. The respondents attain the same end by means of an inverted safety valve. Except for that difference it appears to me that the respondents' machine is substantially the same as that of the complainer; and the question is, whether the substitution of the safety valve for the liquid column so differentiates the respondents' machine from that of the complainer that it cannot be said to constitute an infringement of the complainer's patent.

"The complainer contended that the safety valve is a mechanical equivalent for the liquid column, and that as the substance of the complainer's invention has been taken by the respondents, they cannot plead that they have not infringed his patent merely because they have, as regards one of the parts of the machine, adopted a well-known mechanical equivalent.

"The respondents, on the other hand, argued that the complainer in his specification confines himself to the liquid column as the mode of regulating the vacuum—or, at all events, confines himself to that mode, with a somewhat vague suggestion of one other possible method—and therefore cannot object to a machine which has not the liquid column, although it has a safety valve which effects the same object.

"It is therefore necessary to turn to the complainer's specification and to see how he describes his invention and what he claims.

"In the specification he says—'In carrying out my invention suction is applied to the cows' teats; but a special feature of my arrangements is that the milk is not drawn through the pump. According to another important feature of my invention the degree of suetion or vacuum which is used is regulated by a column of liquid, which may in some cases be the cows' milk itself; and although pumping or equivalent means is employed to produce the suction, being in some cases required only when starting the milking operation, any increase in the pumping action beyond what is necessary, and corresponds to the column of liquid, merely draws air up through the column without materially affecting the degree of vacuum acting inside the apparatus. I believe that a column of liquid of a vertical length of about 12 feet is in most cases sufficient, but the length may be varied if found desirable in any case, and with stiff or dour cows a greater suction may be applied to make them yield their milk freely.'

"The specification then goes on to refer to the drawings appended to the specification, which, *inter alia*, show two tanks, the one 12 feet above the other, connected by a pipe which contains the regulating liquid column.

"Then, after explaining the various drawings, the specification proceeds—'The sucking action or exhaustion may be pro-

duced in any suitable known way, provided that the decree of vacuum is regulated by means of a column of liquid of suitable length whereby the vacuum is prevented from becoming excessive.'

"Finally, the specification says that an apparatus like a gasholder may be conveniently applied for exhausting; and then after describing the way in which the gasholder is to be worked, it is added—'If the weight used to draw up the bell' (*i.e.*, the gasholder) 'is carefully adjusted so as not to produce a degree of vacuum exceeding what is considered sufficient and best, the liquid column may be dispensed with.'

"The first two claims are for the combinations as described with reference to the drawings.

"The third and fourth claims are as follows:—'3. In milking apparatus, the connecting of a pipe from air-exhausting apparatus to a milk receptacle or collector which is separately connected to the teat cups, combined with the application of a liquid column to regulate the degree of exhaustion, substantially as hereinbefore described. 4. Combining with the other part of the milking apparatus the employment of apparatus like a gasholder, the bell of which is drawn up by a suitable weight for exhausting the air, substantially as hereinbefore described.'

"Now, it is clear that the complainer regarded the regulation of the vacuum by means of the liquid column as a matter of first importance in his invention, and although he says that the column may be dispensed with if the gasholder is used to create the vacuum, it is only in that case that it can be dispensed with. Further, when the complainer claims for the gasholder, he does so only as a method of exhausting the air, and not as a mode of regulating the vacuum.

"The respondent has therefore not taken the most important part of the complainer's invention, but it is said that he has adopted a mechanical equivalent, and is therefore guilty of infringement.

"There is no doubt that the respondent's safety valve serves the same purpose as the complainer's liquid column, but it seems to me that that fact does not solve the question. I do not give any weight to the respondent's contention that as the complainer specifies the liquid column, without adding such words as 'or any other suitable means of regulating the vacuum,' he is therefore to be strictly held to the method which he specifies. The want of such general words would not justify a subsequent inventor making an apparatus in which the method of regulating the vacuum was only colourably different from that of the complainer, nor would the addition of such words strike at an apparatus in which a totally different method was used. At the same time, I think that an inventor must be held more strictly to his specification when his invention is for an improvement in the method of producing a known result than in the case when the thing produced is a novelty—*Curtis* v. *Blatt*, 3 Ch. Div. 135.

"Now, the idea of the regulation of the vacuum in a milking machine was not a novelty. Martin, in his patent of 1883, recognised the importance of regulating the vacuum, and attempted to provide means to effect that object, although the description which he gave of the means is not very intelligible, and his method does not seem to have been successful. Nevertheless, the fact is that Martin devised one way of regulating the vacuum; the complainer invented a second way (and it seems to me to be a very simple and ingenious way); and the respondent has hit upon a third means of accomplishing the same end.

"In these circumstances the question seems to me to be, whether the respondents' method is just the complainer's method with a colourable difference. I do not think that it is. It is true that an inverted safety valve was a known contrivance for relieving the pressure of the outward air upon a vessel within which the air had become too much exhausted. But it had never been applied to an apparatus for milking cows. When the idea is suggested it appears obvious enough, but no one had hit upon it before. Martin did not think of it, and I do not believe that the complainer thought of it. The former resorted to a complicated device which I cannot attempt to explain, and the latter applied the liquid column and the gasholder. I do not see why the respondent should be prevented from using the safety valve. It is a mechanical equivalent for the liquid column in the sense that it accomplishes the same object, but in no other sense. I cannot find from the evidence that a liquid column and a safety valve have ever been recognised or used as interchangeable mechanical equivalents in any process. I recognise the ingenuity on the complainer's part in adopting the liquid column to procure the desired effect, but I think that ingenuity must also be credited to the respondents in putting the well-known safety valve to that particular use.

"I am therefore of opinion that the respondents have not infringed the complainer's patent.

"There is one other point with which I must deal. The respondents argue that the fifth claim in the complainer's patent is bad, and that therefore the whole patent is invalid.

"The fifth claim is as follows—'5. The construction of milk receptacle or collector substantially as hereinbefore described, with reference to figures 5 and 6 of the accompanying drawings.'

"Now, the milk collector described in the specification and shown in the drawings is just a milk can with nozzles, to which the indiarubber tubes from the cow and from the exhaust pump can be fixed, having a pane of glass let into the lid, through which the inside of the vessel can be seen, and having, I rather think, a tap by means of which the milk can be drawn off.

"I greatly doubt if such a vessel could in

any case be made the subject of a patent, because I do not think that it required any invention at all. But however that may be, it was clearly anticipated, in my opinion, by Gedge's patent in 1863. Gedge has a reservoir to receive the milk, practically the same as the complainer's collector. The only differences are that Gedge's pane of glass is in the side instead of on the lid, and that it has not a moveable lid but a bung, which may be unscrewed when it is necessary to clean out the vessel. It is true that the pump in Gedge's patent is attached to the reservoir. Gedge apparently thought that it was convenient to have the whole apparatus in one piece, but although the pump was joined to the reservoir, the two were not the less separate pieces of mechanism, and it required no effort of invention to disconnect the two.

"I am therefore of opinion that the fifth claim is bad, and if that is the case, it is not disputed that the whole patent is also bad.

"The last point is sufficient to dispose of the case, but as the question of infringement apart from the fifth claim was fully argued, and the parties desired me to give my judgment upon that question, I have thought it right to do so."

The complainers reclaimed, and argued—(1) The respondents had infringed the complainer's patent. The Lord Ordinary had apparently only two categories of patents in his mind. First, the case where a person invents a new thing introducing a totally new principle, and gets what is truly a master patent which enables him to check all modifications of the patent as infringements. The most notable case of that kind in recent years was the hot-blast, Secondly, at quite the other end of inventions was the combination patent of an old machine, upon which improvements were made so as to obtain the old result in an improved manner, and the Lord Ordinary had put the complainer's patent into this category, but there was a third category which he had overlooked, that, viz., where there was a combination of well-known mechanical appliances, but where the purpose to which the combination was applied had never been attained in that manner before. To that third category the complainer's combination belonged, and the question was whether in the construction of the respondent's machine he had not taken the pith and marrow of the complainer's combination, by the use of a mechanical process equivalent to the means used by the pursuer for regulating the suction. The complainer's combination was for a multiple milking machine by suction with an automatic regulating process, and the whole combination made a new machine. The process used by the complainer for regulating the force of suction in the cows' teats was a column of liquid twelve feet in height; that was a known method of regulating the withdrawal of air from vessels, but had never been applied to such a combination as this before. The respondents took a perfectly well-known mechanical equivalent, viz., an inverted valve, and used it for the same purpose as the complainer had used the liquid column, and that constituted an infringement—*Curtis* v. *Platt*, November 6, 1863, L.R., 3 Ch. Div. 135, Note; *Proctor* v. *Bennis*, August 4, 1887, L.R., 36 Ch. Div. 740; *Miller & Company* v. *The Clyde Bridge Steel Company, Limited*, July 25, 1892, 9 R.P.C. 470; *Automatic Weighing Machine Company* v. *National Exhibitions Association, Limited*, November 18, 1891, 9 R.P.C. 41; *Wenham Gas Company Limited* v. *Champion Gas Light Company*, 9 R.P.C. 49. (2) *Prior Knowledge*—The complainer's invention had not been anticipated by any of the inventions alleged in this case. Gedge's claim was only for application to single cows, and had no automatic regulating machinery. Martin's system was admitted by the Lord Ordinary to be unsuccessful, and it was a well-known principle of patent law that it was only machines that could be successfully worked that could be founded on as fair inventions, while Steinman's system was for the use of catheters, and not for suction pipes to the cows' teats at all. With regard to the complainer's fifth claim, there were several important points about the receptacle which had not been previously the subject of patents. There was the glass top which could be easily removed at ordinary times, but when the air was exhausted could not be moved. There was the fact that for the first time, the milk of each cow was contained in one receptacle, and that it could be seen when one teat was milked out and the pressure could be removed, and finally the fact that such a receptacle had never been used in connection with a multiple cow-milking machine before.

The respondents argued—Gedge had obtained a patent for milking cows by means of suction regulated by means of a pump. All that could be patented afterwards was a combination for improvements upon the method. The complainer had found out one method of improvement and the respondent another, but the one did not infringe the other, as the one previous in date could be infringed only by a colourable imitation of its own method—*Stewart & Briggs* v. *Bell's Trustee*, December 5, 1883, 11 R. 236; *Automatic Machine Company* v. *Knight*, March 20, 1889, 6 R.P.C. 297. If a patent is for a combination only, all the essential and characteristic features of the combination must be used or there is no infringement. In the complainer's case it was expressly stated that the principal feature in the combination was the column of liquid 12 feet high to regulate the action. The respondents' method of arriving at the same result was by means of an inverted valve which was also an old means for preventing collapse when the air was withdrawn from a vessel. Even if it was a mechanical equivalent of the liquid column, it was not an infringement of it—*Gwynne* v. *Drysdale & Company*, March 5, 1886, 11 R. 684; *Nettlefolds, Limited* v. *Reynolds*, April 11, 1892, 9 R.P.C. 270; *Tweedale* v. *Ashworth*, Febru-

ary 12, 1892, 9 R.P.C. 121; *Miller & Company* v. *The Clyde Bridge Steel Company, Limited*, July 25, 1892, 9 R.P.C. 470; *Seed* v. *Higgins & Others*, July 19, 1860, L.R. 8 H. of L. Cases, 550. As regarded the fifth claim for an invention in the receptacle, the Lord Ordinary was right in holding that it was anticipated by Gedge's patent.

At advising—

LORD JUSTICE-CLERK — From time to time during the last twenty-five years various schemes have been proposed for milking cows by mechanical devices, the general features of these being the attachment of cups to, or the insertion of catheters into, the teats of the cow, these being attached to tubes leading to a store vessel, the drawing off the milk being effected by the use of a pump creating a vacuum, and thus drawing the milk along the tubes into the receiving vessel. The further effort has been made to use one pump for drawing the milk from a large number of cows at one time.

It was found that while the suction for drawing off the milk could be effectively used, difficulties arose where there was no automatic regulation of the extent of vacuum, as the vacuum if increased beyond a certain limit tended to injure and cause suffering to the animals, and where the milking of some cows was completed, and the communication between them and the apparatus closed, the extent of vacuum might be suddenly and dangerously increased as regards the others whose udders were not exhausted. The complainer addressed his mind to the endeavour to produce an apparatus which should be free from these defects. He adopted the principle of placing in communication with the pipes in which the vacuum was set up, a tube open at the bottom and resting in a vessel of water, so adjusted that when the vacuum drew up into the tube a column of water of a certain height, air should find its way up the tube and thus prevent the vacuum from becoming excessive, no matter how the exhausting pump might be worked. It was in fact a water valve, the weight of the column of water corresponding to the load by weight, or the pressure by spring in an ordinary mechanical valve. It was indeed a safety valve, but used in the opposite manner from what is ordinarily understood when a safety valve is spoken of. The ordinary safety valve is to relieve pressure by allowing escape of the pressing medium when the pressure has arisen above a certain figure. This safety valve was to allow entrance of the pressing medium when the space from which it was being extracted reached a certain figure of exhaustion. The use of a water column for such a valve relief was certainly an excellent mode, as being absolutely certain in its action, both as regards the exact form of the action taking place, and the extent of its effect. That this water valve as applied to an artificial milking apparatus was a useful and effective appliance, and removed difficulties which before had been found serious, is, I think, the true effect of the evidence which is before us in this case. I do not find in any of the previous attempts to introduce mechanical milking anything which corresponds to this water valve. No automatic arrangement for regulating the vacuum is to be found in them. In all previous milking machines the amount of vacuum depended entirely on the way in which the pump was used by the operator. It depended upon his skill and care whether the vacuum was satisfactorily regulated or not. There was no means of measuring it, or of indicating its figure to the operator, or any other device provided to him for regulating it. On the other hand, I think it is proved that the use of the water column enables the milking to be carried on with safety to the animals, and prevents any sudden changes of the suction action when a number of cows which vary in the freedom with which they give off their milk are being milked together.

The respondents have been using a milking apparatus in which automatic regulation of the vacuum is obtained by using an ordinary valve with a lever held down by a weight, the amount of vacuum being regulated by the position of the weight on the lever. Their valve is in fact just a safety valve of similar construction to those used in boilers, only inverted so as to allow entrance of air into the vessel, instead of allowing steam to escape. The weight holds the valve against the external pressure, and prevents air from entering and diminishing the vacuum, until a certain vacuum has been established by the exhausting pump. It is the case of the respondents that this apparatus was devised and put together without any knowledge of the complainer's milker, that the idea of using an automatic regulating valve was original upon their part, and I shall accept their statement to that effect. But their apparatus was devised and patented subsequent to the patent of the complainer, and the complainer maintains that their apparatus is an infringement of his patent.

The complainer in his specification makes six claims. Of these the first three are for the combination of parts of milking apparatus as shown in the drawings attached to the specification, and in the third the water column valve apparatus is especially set forth. The fourth claim is for a mode of producing the suction by an apparatus like a gas-holder, but no question turns on that claim. The fifth claim is for the construction of the milk receptacle as shown in the drawings. The sixth is for the teat-cup, but upon this also there is no question.

The two questions truly are—first, whether the conplainer's combination with the valve action is valid, and is infringed by the respondents'? and second, whether the fifth claim for the milk receptacle is valid? Of the validity of the pursuer's claim for his apparatus for drawing milk I have no doubt. The combination in my judgment produced a novel apparatus which might properly have been protected by a patent,

and although some arguments were stated against that view in the debate, I cannot say that they at all impressed me. On the second branch of the first question the Lord Ordinary has held that there was no infringement — that the weighted valve used by the respondent is not a mechanical equivalent of the water valve of the complainer, except in the sense that it accomplishes the same object. I cannot concur in that opinion. I think that if it be granted the complainer has a good patent for his combination, the use by the respondent of a valve in a similar combination, effecting exactly the same object as is effected by the water valve of the complainer, is an infringement. It is to my mind clear that it is simply a mechanical equivalent and nothing else.

There remains, however, the second question, is the claim for the milk receptacle valid? That vessel I have already described. Its only features seem to be that the lid is held on by the exhaustion, that the lid being of glass admits of inspection of the interior, and that a separate tube is brought from each teat to the receptacle. I have very anxiously considered whether there is any ground for holding that this receptacle can be held patentable as a new invention, and have come with some regret to the conclusion with the Lord Ordinary, that it cannot be so held. I do not see in what the invention consisted. Can it be called a novel invention that the lid of a vessel which is to be exhausted is allowed to be held on by the air pressure on the creation of a vacuum? I do not think so. There is nothing novel about it, no invention. Can it be said that the use of a piece of glass to enable the interior of the vessel to be inspected is a novel invention. I cannot say so. But in any case, such a use of glass is plainly anticipated in Gedge's patent, in which there is a glass panel in the side of the receptacle. Lastly, is there any invention in using a separate pipe for each teat, instead of combining the pipes from each teat in one pipe, and carrying that pipe to the vessel, which was a mode shown in previous specifications. I do not find in the specification any suggestion that the use of four pipes is in any way a feature of the invention which the patentee puts forward as of importance. No invention is described, and I can see none.

I have therefore come to the conclusion that the fifth claim cannot be sustained. I cannot but regret that the complainer, who I think had a good and patentable invention, should have made a claim which is bad on an unimportant detail of his apparatus. Unfortunately the law is as stated by the Lord Ordinary, that this claim being bad the whole patent must fall. The result, therefore, must be the same as that arrived at by the Lord Ordinary, although in my opinion only upon the invalidity of the fifth claim.

LORD YOUNG concurred.

LORD RUTHERFURD CLARK—I think that the fifth claim is bad. I proceed on the reasons which have been stated by the Lord Ordinary. That is enough for the decision of the case.

I do not, however, wish it to be understood that I am in other respects adverse to the case of the pursuer.

LORD TRAYNER—I agree with your Lordships in holding that the patent in question is invalid in respect of the reasons which your Lordships have stated. The inclination of my opinion is rather in favour of the Lord Ordinary's view, that even had the patent been a good one, the infringement alleged has not been made out, but that is not material in the view which has been taken of the patent itself.

The Court adhered.

Counsel for the Reclaimer — Graham Murray, Q.C.—Daniell. Agents—Davidson & Syme, W.S.

Counsel for the Respondents—C. S. Dickson—Ure. Agents—Gill & Pringle, W.S.

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*Thursday, July* 20.

## FIRST DIVISION.

[Lord Low, Ordinary.

## BROWN (MILLAR'S TRUSTEE) AND OTHERS.

*Succession—General Disposition and Settlement—Conditio si sine liberis—Implied Revocation by Subsequent Birth of a Child.*

A testator who by antenuptial contract of marriage had settled £9000 upon his wife and children, three and a-half years after the marriage, and before any child had been born, executed a general settlement which referred to the marriage-contract, and really dealt with only about £700. Eleven months later a child was born, whose birth he survived for three years, when he died leaving the general settlement unaltered.

*Held* (1)—(following the opinion of Lord Watson in *Hughes* v. *Edwards*, L.R., App. Cas. p. 591)—that whether revocation of a parent's testament by the subsequent birth of a child is to be implied or not, is entirely a question of circumstances; and (2) that looking to the circumstances of this case the settlement had not been so revoked.

The late James Millar, Tarbet, Loch Lomond, executed an antenuptial contract of marriage upon 11th September 1883 by which he conveyed to trustees the sum of £9000, and which contained the following provisions:—"Declaring, as it is hereby declared, that the trustees shall hold and apply the said principal sum of £9000 for behoof of the said James Millar in liferent, during all the days of his life, so long as there shall be no issue of the