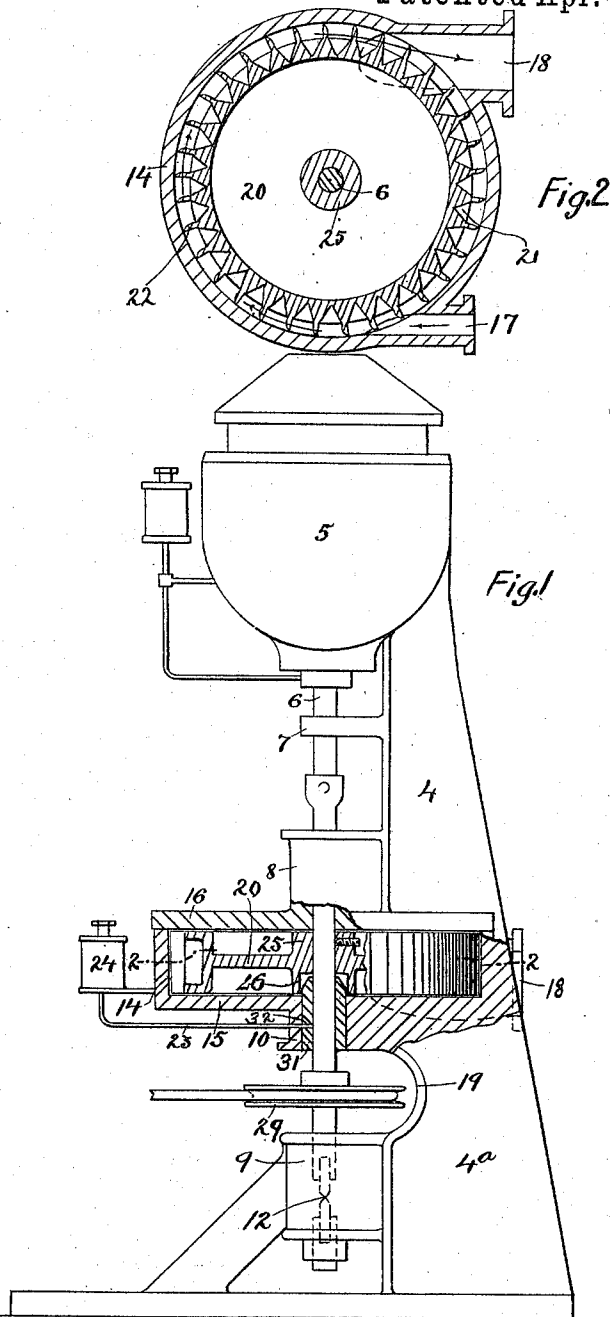


(No Model.)

A. WILSON.
MOTOR.

No. 580,301.

Patented Apr. 6, 1897.



Witnesses
 R. C. Kimber
 & Fred Sears

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UNITED STATES PATENT OFFICE.

ANDREW WILSON, OF MONTREAL, CANADA, ASSIGNOR OF ONE-HALF TO
THOMAS HOCKING, OF SAME PLACE.

MOTOR.

SPECIFICATION forming part of Letters Patent No. 580,301, dated April 6, 1897.

Application filed June 20, 1896. Serial No. 596,320. (No model.)

To all whom it may concern:

Be it known that I, ANDREW WILSON, of the city of Montreal, in the district of Montreal and Province of Quebec, Canada, have
5 invented certain new and useful Improvements in Motors for Operating Centrifugal Separators; and I do hereby declare that the following is a full, clear, and exact description of the same.

10 This invention relates more particularly to steam-power-driven motors for centrifugal cream-separators, and has for its object to improve the construction of same, whereby better results may be obtained at the expense of less steam than have been obtain-
15 able heretofore and to enhance the usefulness of such motors in order that any superfluous power may be utilized by imparting same to a second machine.

20 To such ends the invention may be said, briefly, to consist in mounting a horizontal turbine wheel of peculiar construction upon the vertical shaft of a separating-machine and inclosing such turbine wheel in the usual
25 motor-casing; and it consists, furthermore, in mounting a band-pulley upon such vertical shaft and preferably beneath the motor-casing, from which pulley a band may be taken to any other machine.

30 For full comprehension, however, of the invention reference must be had to the accompanying drawings, forming a part of this specification, in which like symbols indicate corresponding parts, and wherein—

55 Figure 1 is a side elevation of a steam-turbine-operated separator with the frame thereof shown in transverse vertical section and containing my invention; and Fig. 2 is a transverse horizontal sectional view of the
40 motor portion, taken on line 2 2, Fig. 1.

The frame is preferably formed of upper and lower portions 4 and 4^a, to be hereinafter described.

45 The separator proper, 5, is mounted upon the upper end of a shaft 6, held loosely in a vertical position in bearings 7, 8, 9, and 10, formed in one with the frame and supported upon an antifriction-bearing, as at 12. A turbine is rigidly mounted upon such shaft
50 about midway of its length and is inclosed in a chamber 14, the body 15 whereof is formed

in one with the lower portion 4^a of the frame, and the cap 16 is formed in one with the upper portion 4, steam inlet and exhaust pipes 17 and 18 being connected with said chamber. 55

The lower portion 4^a of the frame is recessed, as at 19, in order to allow a pulley 29 to be rigidly set upon the vertical shaft, and the vertical opening that forms bearing 10 may be enlarged to receive a preferably metallic bushing 31, having its upper end of
60 conical form and its body portion preferably horizontally perforated about midway of its length, as at 32, such perforation being connected through a pipe 23 with an oil-cup 24
65 for purposes of lubrication. This bushing is preferably set with its tapered or conical end protruding into chamber 14 in order to prevent the water that, owing to the condensing of the steam, accumulates in such chamber
70 from running down the shaft.

My improved turbine wheel consists of a disk 20, having its edge or periphery increased in thickness and formed with angular recesses 21 and radial projections 22 between such recesses, such recesses and
75 projections constituting and serving as buckets. A hub-section is formed on either side of said disk 20, that, 25, upon the upper side serving as a means through which the turbine may
80 be secured to the shaft, while the one, 26, upon the under side of the disk is recessed to receive the upper end of the bushing 31.

The steam is admitted to chamber 14 through inlet 17 and is exhausted through
85 exhaust-pipe 18, and the operation of the separator is precisely the same as heretofore, excepting that by using my improved turbine as a motor an equally high and a more uniform speed will be obtained with but about
90 two-thirds of the amount of steam-pressure heretofore used than has been obtainable heretofore, while a belt from the pulley 29 may readily be connected to and drive the pump for supplying the milk to the separator
95 proper.

A number of changes may be made in the construction and arrangement of the parts of my machine without departing from the spirit of my invention.

What I claim is as follows:

1. The combination with a vertical operat-

ing-shaft and a suitably-mounted hollow casing, said shaft passing through the chamber formed by said hollow casing, of a turbine wheel mounted upon said shaft within said chamber, a metallic bushing encircling said shaft and located in the under side of said casing; the upper end of said bushing projecting above said under side of the casing, a steam inlet and exhaust to and from said chamber and said exhaust being located at a point below the level of the upper end of said bushing, for the purpose set forth.

2. The combination with an operating-shaft and a suitably-mounted hollow casing, said shaft passing through the chamber formed by said hollow casing, of a turbine wheel mounted upon said shaft within said chamber, a recessed hub upon the under side of said turbine wheel and a metallic bushing located in the under side of said chamber, the upper end of such bushing projecting upward and adapted to be inclosed by said recessed hub, and a steam inlet and an exhaust to and from said chamber, for the purpose set forth.

3. The combination with an operating-shaft and a suitably-mounted hollow casing, said shaft passing through the chamber formed by said hollow casing, of a turbine wheel mounted upon said shaft within said chamber, a recessed hub upon the under side of said turbine wheel and a metallic bushing located in the under side of said chamber the upper end of such bushing projecting upward and adapted to be inclosed by said recessed hub, the said turbine consisting of a disk having annular recesses therein and radial projections between said recesses, said projections having their ends convex on one side and flat on the other, a steam inlet and an exhaust to

and from said chamber, for the purpose set forth.

4. The combination with an operating-shaft and a hollow casing formed in one with the framing supporting said shaft and said shaft passing through the chamber formed by said hollow casing, of a turbine wheel mounted upon said shaft within said chamber, a recessed hub upon the under side of said turbine wheel and a metallic bushing located in the under side of said chamber the upper end of such bushing projecting upward and adapted to be inclosed by said recessed hub, and a steam inlet and an exhaust to and from said chamber, for the purpose set forth.

5. The combination with an operating-shaft and a hollow casing formed in one with the framing supporting said shaft and said shaft passing through the chamber formed by said hollow casing, of a turbine wheel mounted upon said shaft within said chamber, a recessed hub upon the under side of said turbine wheel and a metallic bushing located in the under side of said chamber the upper end of such bushing projecting upward and adapted to be inclosed by said recessed hub, the said turbine consisting of a disk having angular recesses therein and radial projections between said recesses, the ends of said projections having their ends convex on one side and flat on the other, a steam inlet and an exhaust to and from said chamber, and a band-pulley mounted rigidly upon said shaft, for the purpose set forth.

Montreal, 30th day of December, 1895.

ANDREW WILSON.

Witnesses:

FRED. J. SEARS,
R. A. C. KIMBER.