(No Model.) 2 Sheets—Sheet 1.

J. P. CORNETT.

BEATING ENGINE.

No. 524,934. Patented Aug. 21, 1894.

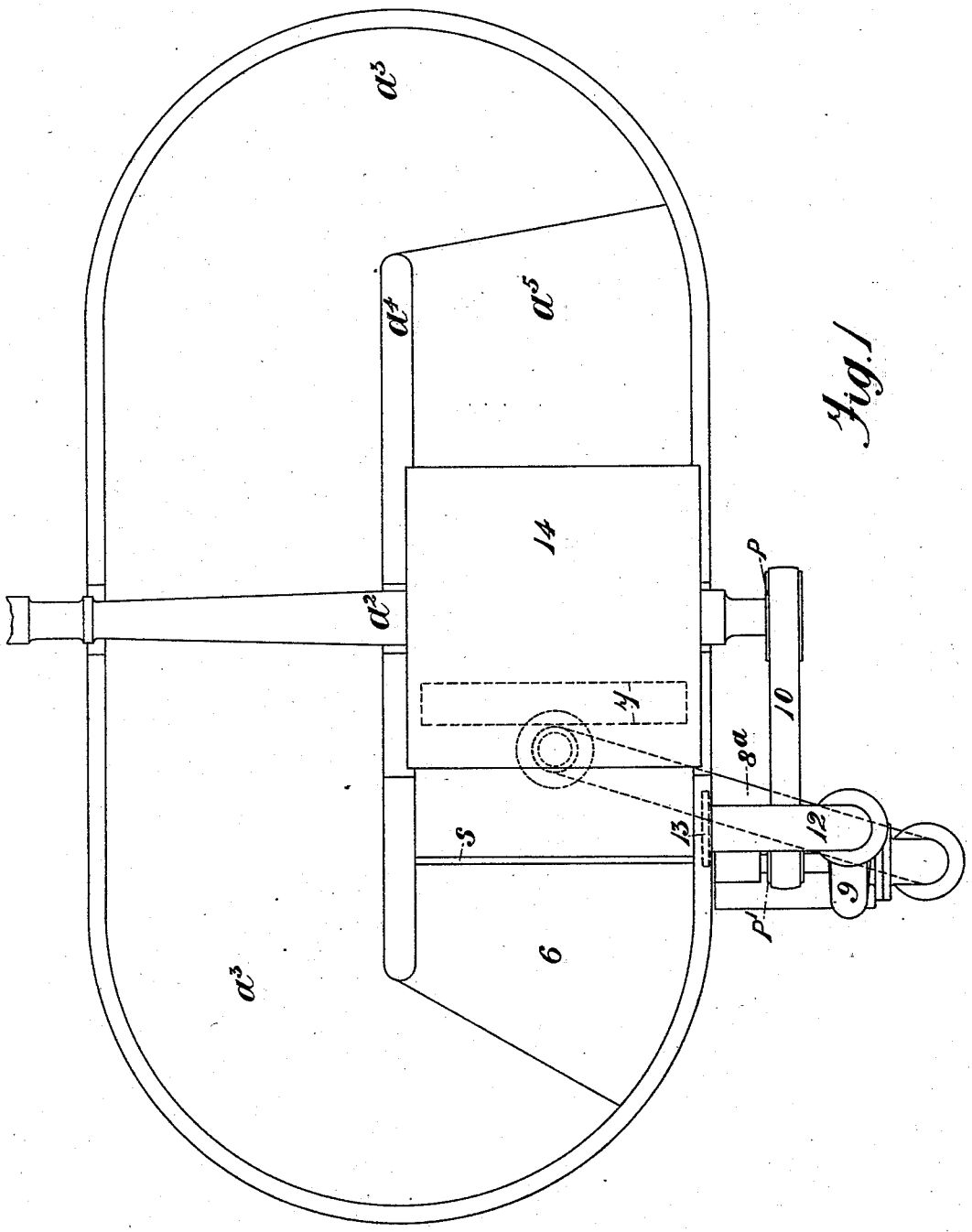

Fig. 1

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3

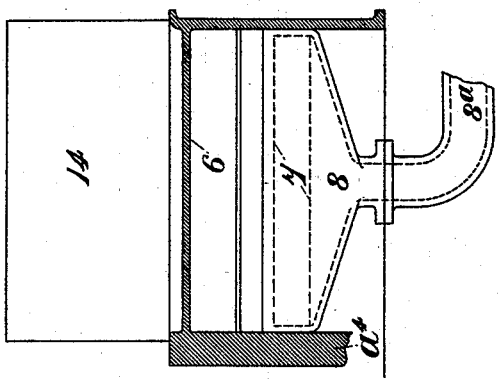
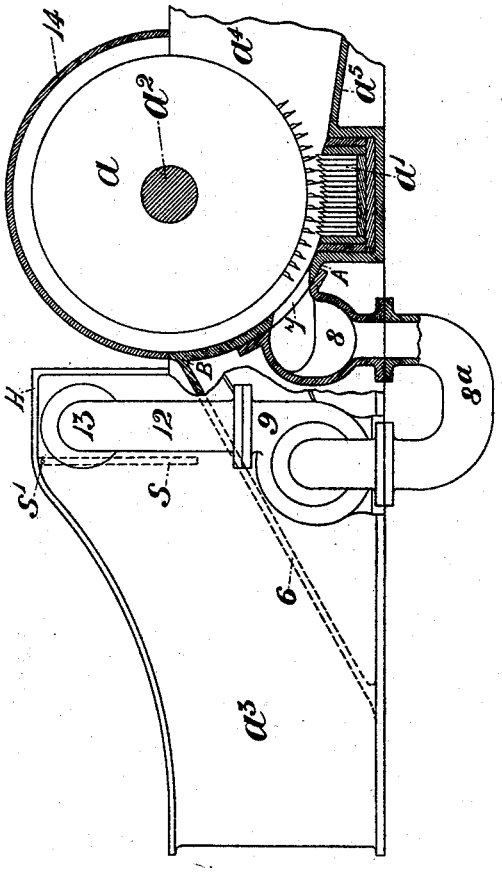


Fig. 2



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UNITED STATES PATENT OFFICE.

JAMES P. CORNETT, OF CLAXHEUGH, NEAR SUNDERLAND, ENGLAND.

BEATING-ENGINE.

SPECIFICATION forming part of Letters Patent No. 524,934, dated August 21, 1894.

Application filed February 6, 1894. Serial No. 499,241. (No model.)

To all whom it may concern:

Be it known that I, JAMES PORTEUS CORNETT, a subject of the Queen of Great Britain and Ireland, and a resident of Claxheugh, near Sunderland, county of Durham, England, have invented certain Improvements in Beating-Engines, of which the following is a specification.

This invention relates to improvements in breaking, bleaching or beating engines for grinding or beating pulp and as will be understood my improvements are applicable to potchers, breakers, washing, bleaching rag and beating engines of every description in which the pulp is caused to pass between the "Hollander" roll and plate prior to its delivery onto or over what is known as the "backfall;" thus my improvements are applicable to such forms of engine as the "Umpherston" type, as well as to the ordinary "Hollander" forms.

A special value attaching to my invention is that it can be readily applied to existing engines at comparatively small cost no reconstruction of the vat or alteration of the roll or plate or mid-feather being necessary.

My improvements will effect a great saving in power and will produce a better pulp at reduced cost and wear and tear of machinery and the method by which I attain these results I will now fully explain with reference to the accompanying drawings, in which—

Figure 1 shows a plan view, Fig. 2 being a side elevational view, partly in sectional elevation. Fig. 3 shows an end view hereinafter described and in the following description like marks of reference designate like parts.

Referring to the drawings, a is the roll, a' the plate, a^2 the roll spindle, a^3 the vat, a^4 the midfeather, a^5 the front fall leading to the plate and 6 is the backfall.

It will be observed that just clear of the plate on the backfall side I construct an outlet 7 in the backfall for the pulp. This outlet is connected to a pipe or conduit 8 which leads *via* pipe 8^a to a centrifugal or other pump or elevator 9 driven by preference by belting 10 from the roll spindle, P P' being pulleys on the roll and pump spindles to take the belting. The delivery from the pump is then carried upward through pipe 12 to a sufficient height to deliver into the vat at 13.

Fig. 3 shows the form of pipe 8 which I prefer, the bottom of the pipe sloping from both ends toward the center, whence the pulp is withdrawn through pipe 8^a as described.

It will also be observed that the backfall is carried up more or less parallel with the roll as between A to B so as to form a continuation, as it were, of roll casing 14 or the roll casing may be carried down to the backfall to produce the same effect. In working, therefore, the power transmitted to the roll is utilized in grinding or beating the pulp passing between it and the plate and immediately the pulp has passed the plate it is led away by the suction of the pump or elevator through outlet 7 and pipes 8 8^a to the pump or elevator whence it is delivered through pipe 12 into the vat at 13. By this arrangement, the increased head at which the pulp is delivered into the vat is utilized to effect the swirling or propulsion of the pulp at an increased velocity within the vat, the sides of which may be heightened as shown at H or as found desirable.

A splash-board s hinged at s' may be conveniently provided as shown.

As usually constructed the roll bars are built in the roll in groups or clumps in order to assist the propulsion of the pulp but in the engine described the bars may be arranged equidistant from one another as the work of propulsion of the pulp is taken away from the roll and is effected as above described.

I am aware that it is not new to remove from the roll the function of propelling the pulp and of lifting it over the backfall nor is there any novelty in the use of pumps, centrifugal or otherwise or Archimedean screws, elevators or propellers for giving motion to the pulp. In all the arrangements hitherto constructed for effecting the purposes of relieving the roll of the work of propelling and lifting the pulp, thereby confining it to its normal function of grinding and breaking the pulp, an entirely new design and construction of vat and engine has been necessary thereby involving a serious item of cost to those paper-makers who might wish to adopt the system.

By my invention no new design of vat or engine is necessary as any existing vat and engine can be easily altered to effect these much desired results at a comparatively tri-

fling cost, and in no engine as hitherto designed has the pulp been taken through an orifice in the backfall as hereinabove described.

In existing "Hollander" engines, it will be observed that the only alteration of any importance necessary to put my invention into practice is the cutting of the orifice in the backfall. After this is done the pipe connections may at once be made as herein described and shown. In existing engines of the "Umpherston" type the alteration will be of the same nature: the backfall must be cut to form the necessary orifice for the pulp exit, when the pipe connections between such orifice and the pump, which will be placed outside the vat, can be made in the ordinary way. The pump will deliver, in the case of an "Umpherston" engine, in precisely the same way as described and illustrated with reference to the "Hollander" engine and the circulation will proceed in the "Umpherston" engine as before, excepting that the pulp will be withdrawn at the orifice in the backfall and be delivered as already fully described.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination with the sloping backfall of a beating engine of an orifice 7 and outlet pipe 8 situated immediately contiguous to the plate, such outlet pipe leading to a propelling or pumping engine 9 adapted to withdraw the pulp through the orifice 7 and pipe 8 and to deliver it through a pipe 12 into the vat at a sufficient level to cause circulation substantially as and for the purposes set forth.

2. In a beating engine in which there is combined with the sloping backfall an orifice 7 and outlet pipe 8 situated immediately contiguous to the plate, such outlet pipe leading to a propelling or pumping engine 9 adapted to withdraw the pulp through the orifice 7 and pipe 8 and to deliver it through a pipe 12 into the vat at a sufficient level to cause circulation, constructing the sloping backfall and roll cover 14 as a continuation of each other substantially as set forth.

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

J. P. CORNETT.

Witnesses:
KELSO STOREY,
Solicitor, Sunderland.
THOMAS CARNSEY,
His Clerk.