No. 848,625. PATENTED APR. 2, 1907.

S. D. BENNETT & G. SYLVIA.

WASTE CONDENSER FOR COMBERS.

APPLICATION FILED JAN. 15, 1906.

Fig. 1.

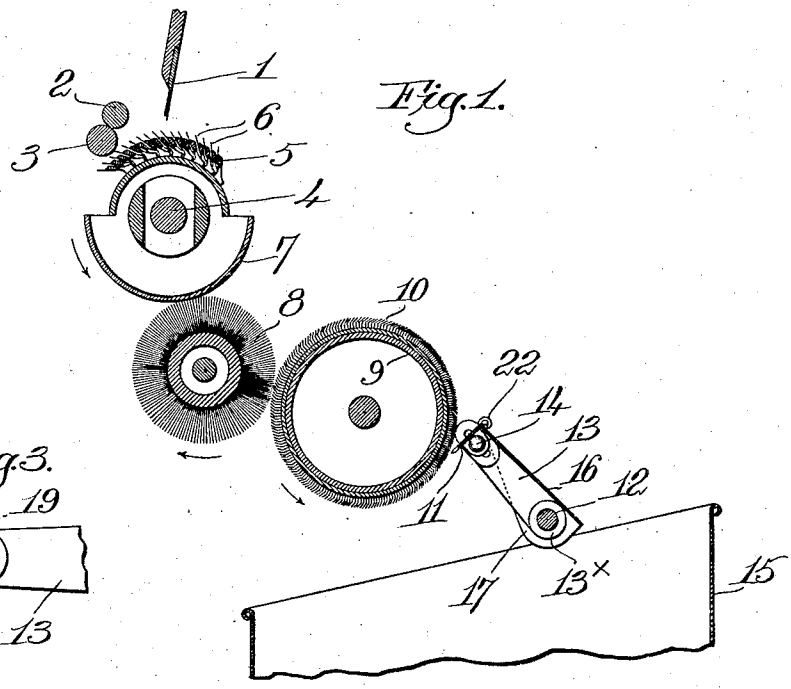


Fig. 3.

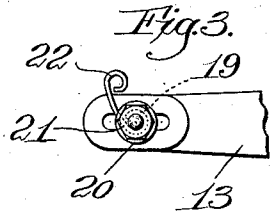


Fig. 2.

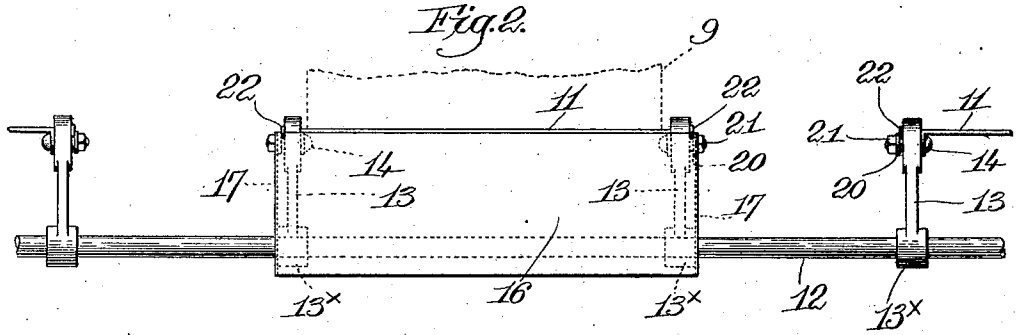
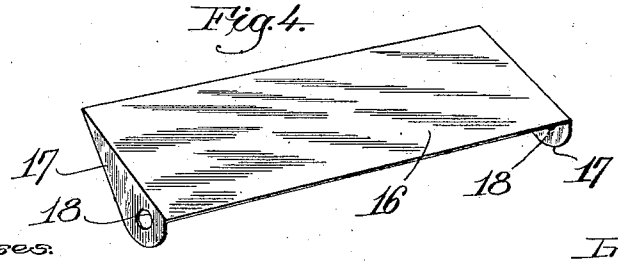


Fig. 4.



Witnesses:
Thomas J. Drummond
Walter R. Trott

Inventors
Stephen D. Bennett,
George Sylvia,
by Munby Gregory, Attys

UNITED STATES PATENT OFFICE.

STEPHEN D. BENNETT AND GEORGE SYLVIA, OF FITCHBURG, MASSACHUSETTS.

WASTE-CONDENSER FOR COMBERS.

No. 848,625. Specification of Letters Patent. Patented April 2, 1907.

Application filed January 15, 1906. Serial No. 296,053.

To all whom it may concern:

Be it known that we, STEPHEN D. BENNETT and GEORGE SYLVIA, citizens of the United States, and residents of Fitchburg, county of Worcester, State of Massachusetts, have invented an Improvement in Waste-Condensers for Combers, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention has for its object the production of novel, simple, and efficient means for condensing the waste taken from the doffer in a comber, and is more particularly adapted for use in connection with the well-known Nasmith type of comber, which is an improved form of the earlier Heilmann comber.

In combers of this type the lap is acted upon by a top comb and by a combing device consisting of a series of needles set into a revolving member, termed technically the "half-lap," the same carrying the waste around to a revolving brush, from which the waste is taken off by a cylindrical doffer-cylinder covered with card-clothing. A vibrating doffer-comb takes the waste from the doffer, and the waste is delivered to a suitable can beneath. As the waste accumulates in the can it must be condensed or pressed down from time to time to keep it clear of the doffer, such condensing heretofore having generally been effected by an attendant, who passes from can to can at frequent intervals and presses down the mass of waste in each. Constant care and attention is required, for if the waste rises it collects on the doffer and fills the card-clothing, rendering the doffer ineffective, and, furthermore, the waste is caught up by the brush and carried to the half-lap. This causes very serious trouble, because the needles of the half-lap are broken or otherwise injured by the accumulation of waste, and the replacement of the injured needles not only reduces production but entails considerable expense every time such repairs have to be made.

In accordance with our invention we have provided means to automatically act upon the waste as it accumulates in the can and compress or condense the waste in such manner that the latter cannot rise high enough to interfere with either the doffer or the brush.

The various novel features of our invention will be fully described in the subjoined specification and particularly pointed out in the following claims.

Figure 1 is a transverse sectional view of a sufficient portion of a comber of the type referred to to be understood with one embodiment of our present invention applied thereto. Fig. 2 is a top plan view of a portion of the oscillating doffer-comb shaft and combs with one of our condensing devices applied thereto. Fig. 3 is a detail in side elevation of one of the catches for connecting the condensing device and doffer-comb, and Fig. 4 is a perspective view of one of the condensing devices detached.

Referring to Fig. 1, the top comb 1, drawing-off rolls 2 3 for the lap, the cylinder-shaft 4, on which is mounted the half-lap 5, provided with the usual needles 6 for combing the under side of the lap and for transferring the waste, the cylinder 7 on shaft 4, the revolving brush or brush-roll 8, the doffer-cylinder 9, covered with card-clothing 10, and the doffer-comb 11 may be and are all substantially of well-known construction in the Nasmith comber.

It is understood by those skilled in the art that a series of doffer-cylinders, each with its coöperating doffer-comb, brush, half-lap, &c., are embodied in a comber, the doffer-cylinders being located at the back thereof.

An oscillating shaft 12 is mounted in suitable bearings in the end frames (not shown) of the comber below the doffer-cylinders, said shaft having pairs of arms 13 secured thereto, one of the doffer-combs 11 being secured in an adjustable manner to the free ends of the arms by bolts 14. As the shaft 12 is oscillated the several pairs of arms 13 and their attached combs 11 rise and fall and detach the waste from the doffer-cylinders, the waste falling into cans 15 (see Fig, 1) of usual construction, having wide mouths.

So far as described the apparatus is of well-known construction and is in widely-extended use.

By reference to Fig. 1 it will be manifest that as the light and fluffy waste accumulates in the can it will rise and contact with the doffer-cylinder or the brush 8, or both, and cause serious trouble and expense, as has been pointed out, unless by compressing or condensing the mass of waste its top is kept down well below the doffer-cylinder.

In accordance with our present invention

we provide means to automatically condense the waste, and to this end we have devised a condenser for each waste-can.

The condenser is herein shown as a rectangular plate 16, made of light, stiff sheet metal, having its ends bent down to form substantially triangular flanges 17, each provided with a hole 18 in its larger rear end, the holes being large enough to easily receive the oscillating shaft 12. The distance between the flanges is such that the said flanges will lie close to the outer faces of the hubs $13^{\times}$ of each pair of arms 13, the condenser 16 resting on the tops of the arms, the front edge of the condenser closely approaching the comb 11. The free front edge of the condenser is detachably connected with the comb in any suitable manner, so that normally the condenser will rise and fall with the comb as the shaft 12 oscillates. Herein we have shown a connecting device consisting of a piece of stout wire having a loop 19, Fig. 3, to embrace the comb-attaching bolt 14 outside the arm, held in place by a washer 20 and the nut 21, said wire being upturned and having its end bent to form a hook 22, which is sprung over the edge of the condenser, as shown in Figs. 1, 2, and 3. The free edge of the condenser is thus detachably connected with the comb in an indirect manner, as will be manifest.

It will be manifest from the foregoing description in connection with the drawings that each pair of comb-carrying arms 13 is equipped with a condenser and that the latter will swing up and down on the shaft 12 as a fulcrum as the doffer-comb vibrates, so that as the mass of waste accumulates in the can below the doffer each descent of the condenser will press down and condense the waste when a sufficient mass of the same has accumulated. This condensing action is so quickly recurring that there is no chance for the waste to rise to a dangerous height above the top of the can, and consequently the doffer-cylinder and brush are maintained free and clear, while at the same time the care and attention of the attendant heretofore necessary to manually condense the waste can be wholly devoted to the proper operation of the comber. When it is desired to throw back the condenser from the arms 13, the catches 22 are pressed forward away from the condenser 16, releasing the same, and it can then be swung back away from the arms and the doffer-comb.

By the use of our invention the waste is held in the can and little or nothing is permitted to fall onto the floor, thereby obviating dirty waste, which is of much less value than that held in the can.

It will be manifest that for a can of a given capacity a much greater weight of waste can be forced into it by condensing constantly and in a uniform manner than can be obtained by manual compression every now and then, and in actual practice we have by the use of our invention increased the weight of the waste in a full can by about thirty pounds.

Having fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In apparatus of the class described, a doffer-cylinder, a comb to remove the waste therefrom and discharge it into a can, means to vibrate the comb, a waste-condensing device normally actuated by said means to condense the waste as it accumulates in the can, and means to permit said condensing device to be moved into inoperative position.

2. In apparatus of the class described, a doffer-cylinder, a comb to remove the waste therefrom and discharge it into a can, an oscillating shaft having attached arms on which the comb is mounted, a waste-condenser fulcrumed on the shaft and extended toward the comb, and means to detachably connect the free edge of the condenser and the arms, whereby an intermittent swinging movement is imparted to the condenser, to compress the waste as it accumulates in the can.

3. The combination, in a comber having means, including a vibrating comb, to discharge waste into a can, and an oscillating shaft with which the comb is connected, of a plate-like condenser vibrated in unison with the comb to condense the waste in the can, downturned end flanges on the condenser, apertured to loosely receive the shaft, and means to detachably connect the free edge of the condenser and the comb.

4. In a comber, means, including a revolving doffer-cylinder and a coöperating comb to discharge waste into a can, means to actuate the comb, combined with a waste-condenser operated automatically by or through said means, and a detachable connection between said means and the condenser, whereby the latter may be swung back into inoperative position away from the comb.

5. In a comber, waste-discharging means, including a revolving doffer-cylinder and a coöperating comb, an oscillating actuating-shaft with which the comb is connected, combined with a sheet-metal waste-condenser loosely fulcrumed on and extended from the shaft to the comb and means to detachably connect the free edge of the condenser and the comb to rock in unison with the latter to condense the waste as it accumulates in the can.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

STEPHEN D. BENNETT.
GEORGE SYLVIA.

Witnesses:
ALVAH M. LEVY,
FREDERICK A. CARRIER.