No. 638,647. Patented Dec. 5, 1899.

J. SELWIG.

HYDRAULIC CONVEYER FOR GUNCOTTON.

(Application filed June 9, 1899.)

(No Model.)

Fig. 1.

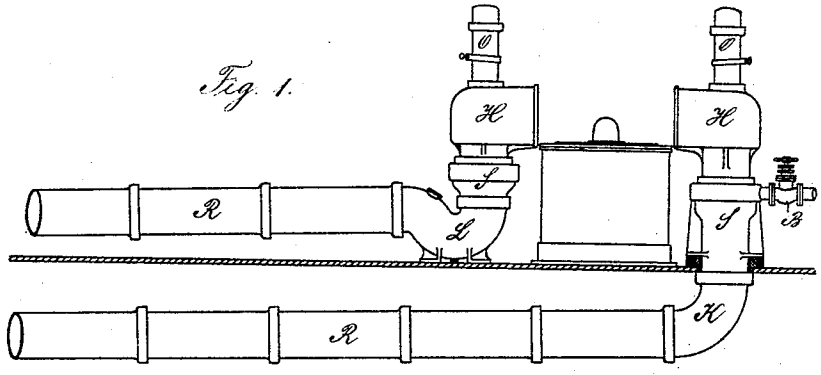


Fig. 2.

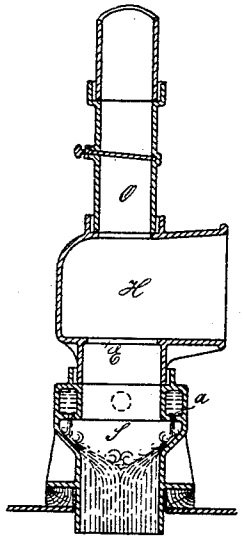


Fig. 3a.

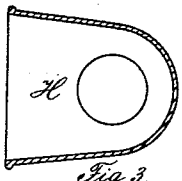


Fig. 3.

Fig. 4.

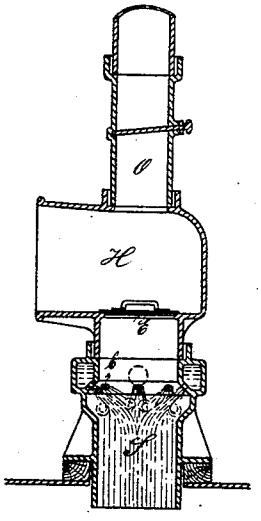


Fig. 2a.

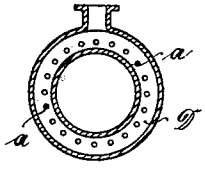


Fig. 3a.

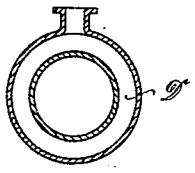
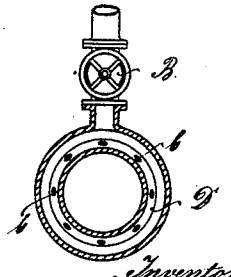


Fig. 4a.



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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

JOHANNES SELWIG, OF BRUNSWICK, GERMANY.

HYDRAULIC CONVEYER FOR GUNCOTTON.

SPECIFICATION forming part of Letters Patent No. 638,647, dated December 5, 1899.

Application filed June 9, 1899. Serial No. 719,991. (No model.)

To all whom it may concern:

Be it known that I, JOHANNES SELWIG, engineer, a subject of the German Emperor, residing at Brunswick, Germany, have invented a new and useful hydraulic transport apparatus for guncotton or similar nitrated substances freed from the surplus of acid in centrifugal machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which make part of this specification.

My invention relates to improvements in the apparatus hitherto employed and the arrangements made for transporting guncotton or similar nitrated substances freed from the surplus of acid in nitrating or acid centrifugal machines to the washing-house or any other place. Usually the guncotton was taken out of the centrifugals by means of tongs and put into boxes, which were conveyed to the washing-house. Then the guncotton was plunged into water contained in large washing-basins, or it was plunged directly from the centrifugals into water contained in movable wooden tubs standing close by, which were then rolled to the washing-house. Both kinds of transport require much work. Moreover, the transport of the guncotton is not free from danger, as the workmen are often severely hurt by a spontaneous ignition of the guncotton during its transport. On the other hand, open tubs filled with water should be avoided in the nitrating-house, as the nitrating-acid is diluted by the aqueous vapors developed by it.

The object of my invention is to do away with the periodical transport of the guncotton by workmen, rendering it at the same time perfectly safe, automatic, and continuous. I attain this end by combining the immersing of the guncotton in the water with its transport by water which is running in an inclined pipe or channel, employing at the same time a new and continually-acting apparatus.

This apparatus consists of a vertical funnel of cylindrical, conical, or any other shape suiting the purpose, which is at its lower open end connected by an elbow-pipe or an S-shaped pipe with an inclined pipe or open channel leading to the place to which the guncotton is to be transported. The funnel, which is put up close by the centrifugal machine, is inclosed near its upper open end by an annular hollow room communicating with the water-admission pipe and fitted at its inner side with water-discharge openings arranged in such a way that the water running out of them envelops the guncotton thrown into the funnel and is equably distributed. Over the funnel there is arranged a fume-hood, which is connected with a fan for drawing off the nitric-acid fumes as well as the aqueous vapors.

The apparatus, which is constructed throughout of earthenware or cast-iron enameled on the inner side, is used in the following manner: The water having been admitted into the funnel by opening the water-inlet valve, the guncotton is taken out of the centrifugal with tongs and thrown into the funnel. There it is instantly enveloped by the water continually rushing in from all sides and falls down into the transport-pipe, to the end of which it is driven by the water-current. Here it is collected in baskets or suitable wooden vessels. Experience proves that if sufficient quantities of water—say two hundred to two hundred and fifty gallons per minute—are running through the apparatus the plunging of the guncotton into basins filled with water can be completely dispensed with.

The transport-pipe may have a diameter of eight to twelve inches and a fall of one-eighth to one-fourth of an inch per foot. It is allowed for saving height to employ a transport-pipe rising at first at any angle to a certain height and then falling. I have ascertained that if such a rising pipe is employed the guncotton when it is in the rising part of the pipe is pushed forward by the hydrostatic pressure of the column of water filling the lower part of the funnel even if the transport-pipe rises rather steeply.

Figure 1 of the drawings represents in front elevation two transport apparatuses of the above-described kind fitted upon the right and left side of the centrifugal N. In the former the transport-pipe R, which is connected with the funnel S by the elbow-pipe K, falls continually. In the latter a trans-

port-pipe is employed that rises in the S-shaped pipe L, attached to the funnel S. Figs. 2, 3, and 4 show, on a larger scale, three funnels S of a different construction in vertical cross-section, the middle one with the pipes K and R. Figs. 2^a, 3^a, and 4^a show them in horizontal cross-section following the line *v w*. Fig. 3^b is a horizontal cross-section, following the line *y z*, through the fume-hood H, covering the upper mouth E of the funnels into which the guncotton is thrown, and which may be closed by a light cover if the apparatus is not used as it may be seen in Fig. 4.

The fume-suction pipe O, arranged at the top of the fume-hood, is fitted with a shutter.

In the funnel represented by Figs. 2 and 2^a the water admitted into the annular room D enters the widened part of the funnel S through a large number of small holes *a* in single vertical jets, which after rebounding from the conical inner side of the funnel are diverted in good distribution to its center.

In the apparatus shown in Fig. 3 and 3^a a narrow circular slit *o* in the inner circumference of the annular room D forms the inlet-opening through which the water enters the funnel, at the same time converging from all sides in an oblique direction.

In the apparatus represented by Figs. 4 and 4^a the water enters the funnel through eight discharge-openings *b*, forming eight inclined water-jets directed to the center of the funnel.

The three above-described funnels are only specimens of such funnels as serve the purpose well, for it is clear that the necessary good distribution of the water entering the funnel may be obtained otherwise.

I am aware that prior to my invention it has been tried to transport centrifugally-treated guncotton by throwing it into a single powerful water-jet which carried it forward in the desired direction, but it was done with little success, and this kind of transport has been given up probably on account of the deficiency of the employed apparatus. (See Guttmann, *Industry of Explosives.*) Therefore I do not claim this kind of hydraulic transport of guncotton; but

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

1. In a hydraulic-transport apparatus for guncotton or similar nitrated substances freed from the surplus of acid, the combination of a receiving-hood, means connected with the hood for exhausting the nitric-acid fumes, a transport-pipe entering the bottom of the hood, and hydraulic means for forcing the substance through the transport-pipe, substantially as set forth.

2. In a hydraulic-transport apparatus for guncotton or similar nitrated substances freed from the surplus of acid, the combination of a receiving-hood, an acid-fume-exhausting pipe connected with the hood, a transport-pipe entering the hood, and an annular water-chamber communicating with the transport-pipe through a series of openings adapted to throw a converging mass of water into the transport-pipe for forcing the substance through the same, substantially as set forth.

3. In a hydraulic-transport apparatus for guncotton or similar nitrated substances freed from the surplus of acid, the combination of a receiving-hood, an acid-fume-exhausting pipe connected with the hood, a transport-pipe entering the hood at the bottom thereof and having an enlarged portion provided with a sloping wall, and an annular water-chamber communicating with the transport-pipe by a series of openings through which the water passes to the sloping wall of the transport-pipe, thereby throwing a converging mass of water into the transport-pipe for forcing the substance through the same, substantially as set forth.

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

JOHANNES SELWIG.

Witnesses:
GUSTAV WELGER,
AUGUST BERGER.