No. 655,568. Patented Aug. 7, 1900.

F. MÜLLER.

SACK CLEANING MACHINE.

(Application filed Sept. 22, 1899.)

(No Model.)

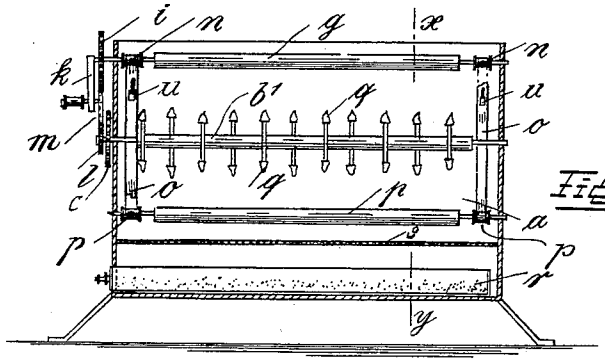


Fig. I.

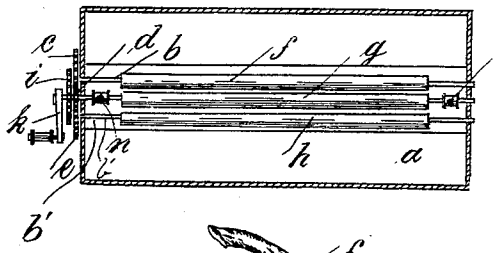


Fig. II.

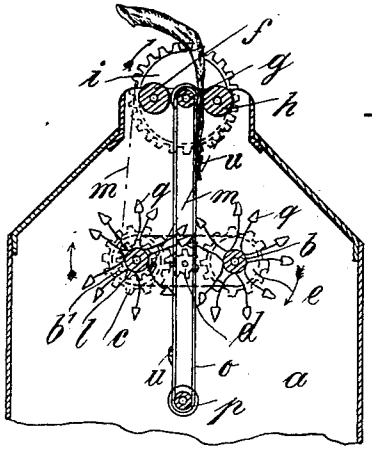
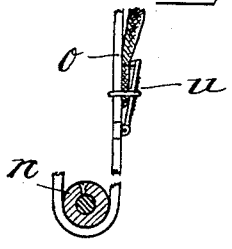


Fig. III.

Fig. IV.



Witnesses:

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UNITED STATES PATENT OFFICE.

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SACK-CLEANING MACHINE.

SPECIFICATION forming part of Letters Patent No. 655,568, dated August 7, 1900.

Application filed September 22, 1899. Serial No. 731,332. (No model.)

To all whom it may concern:

Be it known that I, FRITZ MÜLLER, a subject of the King of Prussia, German Emperor, and a resident of the city of Berlin, Germany, have invented a certain new and useful Improvement in Machines for Cleaning Sacks, (for which I have already filed an application in the following foreign countries: Germany, dated July 18, 1899, Serial No. K. B. 15,044; Austria, dated August 26, 1899, Serial No. 10, 7 A. M.; Hungary, dated August 31, 1899, Serial No. 13,264; France, dated August 26, 1899, Serial No. 280,095; Belgium, dated August 26, 1899, Serial No. 113,805; Switzerland, dated August 31, 1899, Serial No. 22,019, and Great Britain, dated August 26, 1899, Serial No. 17,330,) of which the following is a specification.

My invention relates to a machine for beating the dust out of all kinds of sacks for flour, corn, plaster-of-paris, cement, &c., and is intended to replace in an effective and clean method the usual plan hitherto used of beating the dust out of the empty sacks by hand. The cleaning or beating out of the dust from the empty sacks causes very considerable injury to the health of the worker, wastes the material, and causes much dirt. In cleaning and beating out the sacks the room becomes filled with clouds of dust of the finely-divided particles of the former contents of the sacks, which in a very short space of time completely covers the walls, ceiling, and all the objects in the room, whereby a not inconsiderable loss of usable material results, all of which is effectively overcome by the present invention and all uncleanliness avoided. These clouds of dust particles in the room cover at the same time the clothing and in spite of his clothing the whole body of the worker. They penetrate at each breath into the lungs, stop up all the pores of the skin, render the work more difficult, and thus make it almost impossible to clean out the dust thoroughly from the sacks.

In the accompanying drawings, Figure 1 is a longitudinal section of the machine. Fig. 2 is a plan. Fig. 3 is a cross-section through the line $x\ y$ of Fig. 1, enlarged to twice the scale. Fig. 4 is a detail view, enlarged, showing the method of using the clips.

The box a, closed on all sides, has two or more beater-shafts $b\ b'$, carried in the sides, which are fixed to the toothed driving-wheels $c\ e$ on the outside of the box and by which they are driven. The top of the box a is closed in by the three guide-rollers $f\ g\ h$. The rollers f and h run loose; but the middle roller g is fitted with a chain-wheel i, with a handle k attached to it outside the box for setting in motion the whole of the mechanism. In front of the toothed wheel c and firmly attached to it is a chain-wheel l for the purpose of driving it from the handle k by the endless chain m, running over the wheel i and the wheel l. The toothed wheel c, turning along with the chain-wheel l, produces a uniform motion of the beater-shafts, by their gearing-wheels $c\ d\ e$, in the direction shown by the arrows in the drawings.

The middle guide-roller g, which does not take up the whole of the space between the sides, carries on its axle at each end inside the box a a fixed but adjustable pulley n, over which a tightly-stretched band o is led down to the loose shaft p. These bands o are provided at certain places with suitable eccentric clips u or other contrivance for holding the sack fast, and carry the sack to be cleaned between the fixed roller g and the loose roller h through into the box, first going downward past the beaters q, then round the loose shaft p, then upward past the beaters again, and finally between the roller g and the other loose roller through to the outside. As soon as the eccentric clips appear above with the end of the sack the clips are quickly loosened from the sack, while the continued motion of the handle brings the dusted sack to the outside by means of the rollers.

The beater-shafts $b\ b'$ are provided with beaters or clappers swinging loose and attached by strong straps or other bands and arranged at suitable distances, so that the beaters of the shaft b always strike the sack on one side only at those places which the beaters of the shaft b' do not strike on the other side of the sack.

Below in the box a is a collector or drawer r, covered by a sieve or wire network s, for the purpose of gathering the material separated from the sacks and preventing by the sieve or netting the sack from again taking up the dust.

The method of operating the machine is as follows: The handle *k* is turned until the clips *u* appear above the guide-rollers. When the sack to be cleaned has been fixed with its edge or seam in the clips and held fast by them, the seam is pushed in a little between the fast roller *g* and the loose roller *h*, and then the handle *k* is set in continual motion. Then while the fast roller *g*, actuated by the handle *k*, carries the sack into the machine by the bands *o* along with the rollers *n*, connected with the lower loose shaft *p*, the handle *k* actuates at the same time the chain-wheel *i*, which turns the chain-wheel *l* by the chain *m* and the toothed wheel *c* of the beater-shaft gearing *c d e*, fixed to it, in the direction shown by the arrows in Fig. 3 in the drawings. On its way downward the sack is gradually throughout its whole length led between the violently-beating rapidly-swinging beaters, then round the shaft *p*, and then again upward on its way, being again passed between the swinging beaters, whereby it is violently shaken throughout its length by the vigorous blows of the beaters and as it hangs freely downward, and is thus thoroughly freed from all material which may have adhered to it. The bands *o* bring the well-dusted sack by help of the clips between the fixed roller *g* and the loose roller *f*. As soon as the clips appear above the rollers they are at once quickly released and the rollers are kept in motion by the handle until the end of the sack has passed out. A few more turns of the handle bring the clips into the right position at the top for fixing the next sack.

It is of very special importance that the bottom of the sack should not be fixed to the clips, but to either the seam or opening, so that the sack may be kept closed, and thus the dirt removed from the outside of the sack cannot settle upon the inside of the sack.

Having fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a machine for cleaning sacks, the combination with a box or casing, of beater-shafts mounted upon said casing or box, loosely-hanging beaters secured by straps to said beater-shafts, gearing upon the outside of said box or casing for driving said beater-shafts, a driving-shaft mounted above said beater-shafts, pulleys rigidly mounted upon said driving-shaft, and similar pulleys upon a counter-shaft beneath said driving-shaft, a belt adapted to run upon said pulleys, clips upon said belt adapted to engage the outer edge of a sack, and shafts upon each side of said driving-shaft carrying guide-rollers, substantially as described.

2. In a machine for cleaning sacks, the combination with a box or casing, a sieve or netting in the lower portion thereof, and a removable drawer beneath said sieve or netting; of beater-shafts mounted upon said box or casing, loosely-hanging beaters secured by straps to said beater-shafts, gearing upon the outside of said box or casing for driving said beater-shafts, a driving-shaft mounted above said beater-shafts, pulleys rigidly mounted upon said driving-shaft, and similar pulleys upon a counter-shaft beneath said driving-shaft, a belt adapted to run upon said pulleys, clips upon said belt adapted to engage the outer edge of a sack, and shafts upon each side of said driving-shaft carrying guide-rollers, substantially as described.

3. In a machine for cleaning sacks the combination of beater-shafts and their swinging beaters, with the chain-wheel *i* and chain-wheel *l* driven by the chain *m*, the adjustable pulley *n*, the bands *o* for holding the sack fast by clips or the like and leading it downward, past the beaters, to and round the loose shaft *p* then upward, past the beaters again, and finally to the outside, the guide-rollers *f*, *g*, *h*, in connection with the guiding-bands *o*, the beater-shaft gearing *c*, *d*, *e*, and the casing or box *a* inclosing portions of said mechanism all substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.

FRITZ MÜLLER.

Witnesses:
FRANZ SCHULTZE,
CLARA SCHULTZE.