(No Model.)

A. C. ADAM & D. STEWART.

APPARATUS FOR SCOURING AND WASHING FABRICS, &c.

No. 328,271. Patented Oct. 13, 1885.

FIG. 2.

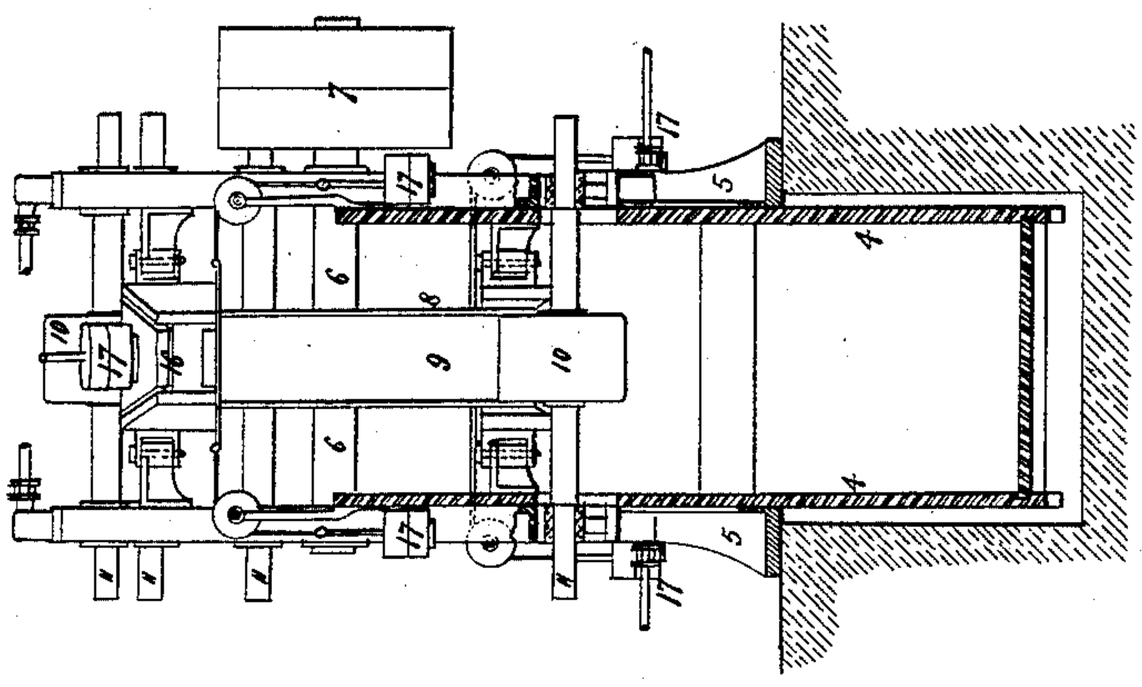


FIG. 3.

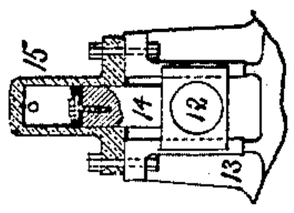
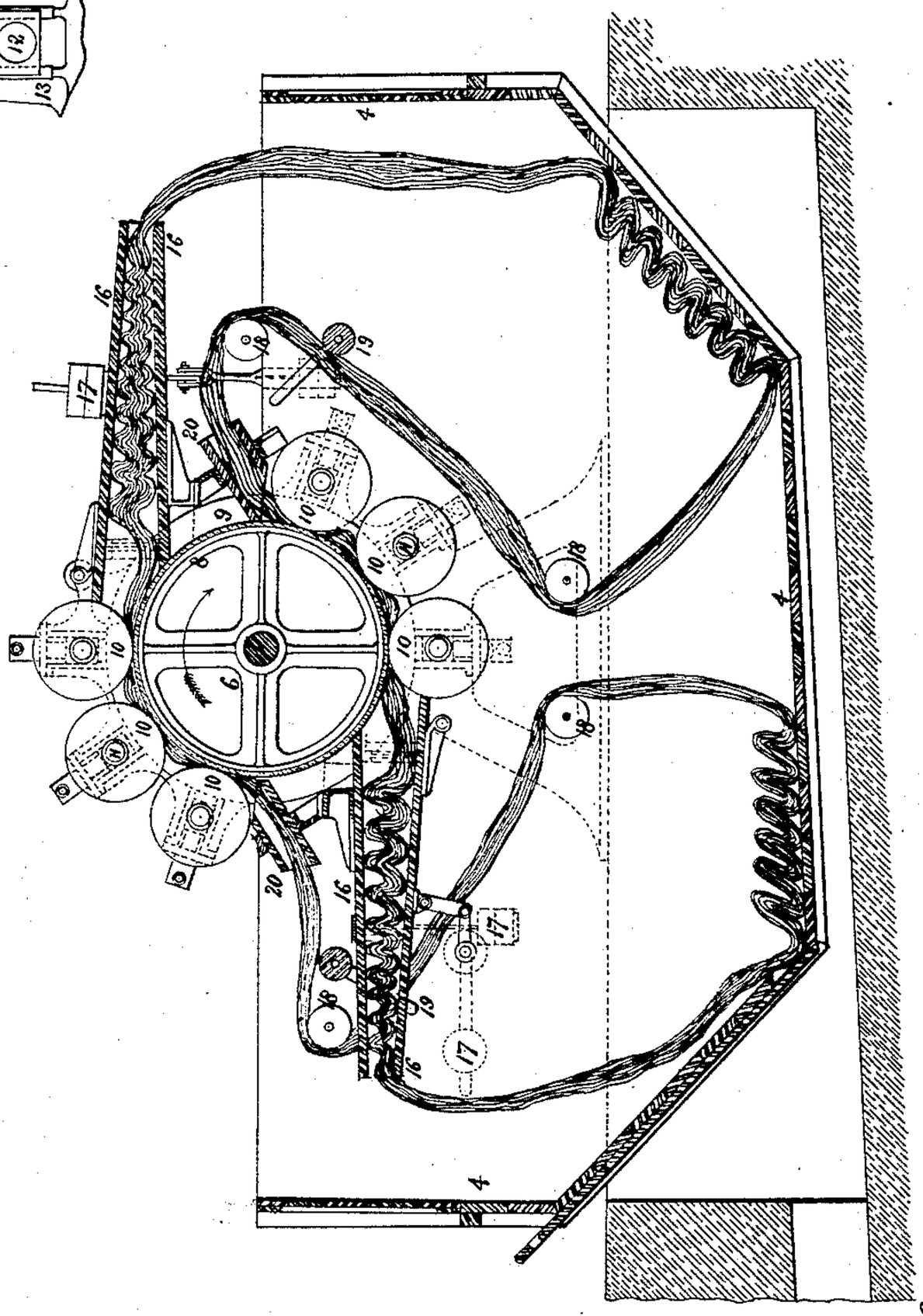


FIG. 1.



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UNITED STATES PATENT OFFICE.

ALEXANDER C. ADAM AND DUNCAN STEWART, OF GLASGOW, COUNTY OF LANARK, SCOTLAND.

APPARATUS FOR SCOURING AND WASHING FABRICS, &c.

SPECIFICATION forming part of Letters Patent No. 328,271, dated October 13, 1885.

Application filed January 26, 1885. Serial No. 153,998. (No model.) Patented in England February 21, 1882, No. 826.

To all whom it may concern:

Be it known that we, ALEXANDER COCHRANE ADAM and DUNCAN STEWART, subjects of the Queen of Great Britain and Ireland, and residents of Glasgow, in the county of Lanark, Scotland, have invented certain Improvements in Machinery for Scouring, Milling, Fulling, Washing, and Wringing Woven Fabrics, (for which we have obtained a British patent dated February 21, 1882, No. 826,) of which the following is a specification.

Our said invention has for its object to improve the construction and action of machinery for scouring, milling, fulling, washing, and wringing woven fabrics.

Our improved machinery comprises a cylinder or drum upon a horizontal shaft, and made with a channel-shaped rim, which is generally of brass; and this cylinder has two sets of three nipping-rollers fitting in between the sides of the channel, for the purpose of nipping and acting on the woven fabrics, which, in the form of chains, or in a gathered rope-like condition, pass between the nipping-rollers and the cylinder. After passing under one set of nipping-rollers the fabric passes between rubbing or compressing boards, and then descends into the tank, whence it is drawn up again, to be passed under the second set of nipping-rollers and between a second set of rubbing or compressing boards. The two ends of the length of fabric may be united in the usual way, and the fabric may be passed repeatedly through the apparatus. The nipping-rollers have the pressure with which they act on the fabric determined by small hydraulic cylinders arranged to act on their bearings, these cylinders being in communication with a hydraulic accumulator, the weight on which is adjusted to suit the desired pressure. If desired, the hydraulic cylinders may be connected to different accumulators, so that the pressures on the several rollers may be regulated separately. The nipping-rollers are made with their outer or acting parts of wood or rubber, and the rollers of one set are by preference applied to the cylinder so as to be diametrically opposite to those of the other set, in order that their pressures on the cylinder may be nearly balanced.

Figures 1 and 2 on the accompanying sheet of drawings are vertical sections as at right angles to each other, and Fig. 3 is an enlarged detail view.

In these drawings the same reference numerals are used to mark the same or like parts wherever they are repeated.

Our improved apparatus is fitted in connection with an oblong wooden vat or vessel, 4, made with vertical sides and ends, and with its bottom inclined at the ends. This vat 4 is fixed between a pair of cast-iron standards, 5, formed and fitted with bearings for various parts, and which is indicated by dotted lines in Fig. 1. On a main shaft, 6, carried in bearings on the standards 5, and provided with fast and loose pulleys 7 for a driving-belt, there is fixed the cylinder 8, having a brass channel-shaped rim, 9, and two sets of nipping-rollers, 10. Each set, comprising three rollers, is arranged diametrically opposite to each other, and so as to work in the channel of the cylinder-rim 9. The shaft 11 of each nipping roller 10 is held in bearings 12, fitted, as shown in Fig. 3, to move in guides 13, formed in the standards 5, in positions radiating from the center of the cylinder 8, and the bearings 12 are pressed toward the center in each case by the ram 14 of a small hydraulic cylinder, 15. The several hydraulic cylinders 15 are connected by pipes, which are not fully shown in the drawings, with a hydraulic accumulator, which is not shown, but which may be of any suitable known construction, and which is weighted to correspond with the pressure desired to be applied to the nipping-rollers 10. With this arrangement of hydraulic-pressure bearings the nipping-rollers 10 move inward and outward to accommodate themselves to varying thicknesses of the fabrics passing between them and the cylinder while they continue to act with uniform pressure.

The woven fabric which is being operated upon is in Fig. 1 represented in the form of an endless chain or set of chains, the ends being joined so that the fabric may be passed repeatedly through the machinery. After the fabric has passed between the cylinder 8 9 and either set of three nipping-rollers 10, it proceeds between rubbing or compressing boards

16, forming a kind of tapering spout or duct, with the sides movable, and also the top or bottom. As usual with such boards 16, those of them which are movable are pressed inward by weights 17, applied either directly, or by levers or by cords and pulleys. From the outer contracted end of each set of rubbing-boards 16 the fabric descends to and accumulates at the bottom of the vat 4, whence it is drawn up again over guide-rollers 18 and between dividing-pins 19, and then is led through guide-spouts 20 in between the cylinder 8 9 and nipping-rollers 10. At the left-hand side of the machine, as seen in Fig. 1, the ascending fabrics are divided so as to pass up one half on each side of the boards 16.

Instead of the bearings 12 of the nipping-rollers 10 being acted on directly by hydraulic cylinders, the hydraulic pressure may be communicated through levers, in which case fewer hydraulic cylinders may be required.

What we claim as our invention is—

1. In combination, a cylinder, 8, having a channel-shaped rim, nipping-rollers 10, hydraulic cylinders arranged to act on the nipping-rollers, weighted rubbing and compressing boards 16, and guide-rollers, all arranged in or partly in a vat, and operating in the manner and for the purposes substantially as hereinbefore described.

2. The combination of two diametrically-opposite sets of nipping-rollers, 10, with one cylinder, 8, and with guide-rollers which lead the fabric down into the vat between its passages under the two sets of nipping-rollers, substantially as hereinbefore described.

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

ALEXR. C. ADAM.
DUNCAN STEWART.

Witnesses:
EDMUND HUNT,
DAVID FERGUSON.