June 12, 1923.

1,458,462

R. BRAUNSTEIN

APPARATUS FOR EFFECTING THE EXTRACTION SUCCESSIVELY OF SHEETS OF PAPER CONTAINED IN A MAGAZINE, AND FOR FOLDING SUCH SHEETS

Filed July 20, 1921

2 Sheets-Sheet 1

Fig. 1

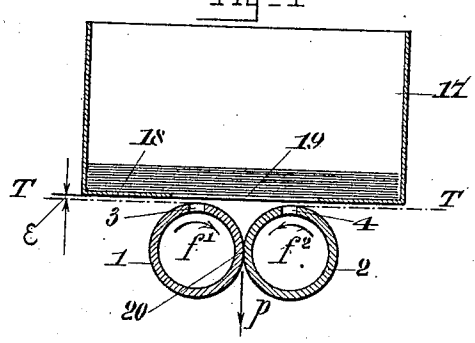
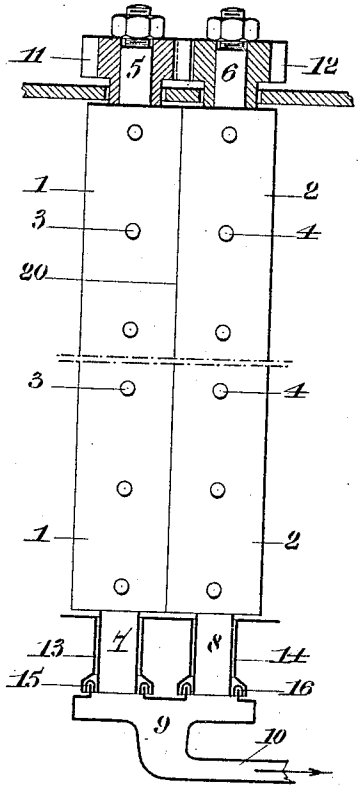


Fig. 2



Inventor:

Roger Braunstein

By Lawrence Langner

Attorney

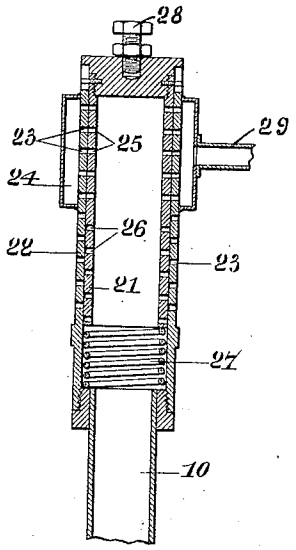
June 12, 1923. 1,458,462

R. BRAUNSTEIN

APPARATUS FOR EFFECTING THE EXTRACTION SUCCESSIVELY OF SHEETS OF PAPER CONTAINED IN A MAGAZINE, AND FOR FOLDING SUCH SHEETS

Filed July 20, 1921 2 Sheets-Sheet 2

Fig. 3



Inventor:
R. Braunstein
By
Lawrence Langner
Atty

Patented June 12, 1923. 1,458,462

UNITED STATES PATENT OFFICE.

ROGER BRAUNSTEIN, OF PARIS, FRANCE.

APPARATUS FOR EFFECTING THE EXTRACTION SUCCESSIVELY OF SHEETS OF PAPER CONTAINED IN A MAGAZINE, AND FOR FOLDING SUCH SHEETS.

Application filed July 20, 1921. Serial No. 486,254.

(GRANTED UNDER THE PROVISIONS OF THE ACT OF MARCH 3, 1921, 41 STAT. L., 1313.)

To all whom it may concern:

Be it known that I, ROGER BRAUNSTEIN, a citizen of the French Republic, residing at Paris, 83 Bd. Exelmans, have invented improvements in apparatus for effecting the extraction successively of sheets of paper contained in a magazine, and for folding such sheets (for which I have filed an application in France June 23, 1920, No. 517,648), of which the following is a description.

This invention comprises an apparatus for effecting the extraction successively of sheets of paper contained in a magazine, and for folding such sheets. In order to facilitate the explanation of the apparatus in question it has been illustrated by way of example in the accompanying drawing, wherein:

Figure 1, is a sectional elevation of the apparatus, and

Figure 2, is a plan view partly in section.

Fig. 3 is a sectional view of a valve device.

The same reference numerals indicate the same parts in the figures.

The apparatus comprises two hollow parallel cylinders 1 and 2 formed with holes 3 and 4 disposed along a line parallel to the axis of each cylinder. These cylinders are supported at one end by spindles 5 and 6 carried by bearings suitably arranged so that the one can be adjusted for example by means of a micrometer screw with the object of increasing or diminishing the pressure of the cylinders 1 and 2 against one another.

At their other ends the said cylinders are supported by trunnions 7 and 8 communicating with the interior of the cylinders 1 and 2 on the one hand, and communicating with a chamber 9 on the other hand connected to a conduit 10 which can be put in communication either with an air exhausting machine or with the atmosphere.

For this purpose, the conduit 10 is provided with a valve device. This device comprises a hollow piston 21 provided with suitable perforations and arranged for reciprocation in a fixed sleeve 22 which is also provided with perforations and surrounded for a part of its length by an annular chamber 24. The perforations 23 of the sleeve are of equal size and equi-distant from each other while the perforations of the piston are distributed in such manner that certain of them 25 are coincident with perforations of the sleeve while others of them 26 are covered, and vice versa. The piston is adapted to be moved in one direction in the sleeve by a suitable cam (not shown) acting, for instance, on the head of the screw 28 and in the opposite direction by a spring 27. The open end of the sleeve is in communication with the conduit 10 while the chamber 24 is in communication with a suitable vacuum pump through a conduit 29.

The operation of the valve device is as follows:—

In the position of the piston represented in Fig. 3, the orifices 25 are coincident with the orifices 23 of the sleeve inside the chamber 24 and the orifices 26 are covered. This position of the piston corresponds to the period of exhaust. When the piston, on the contrary, is moved by the cam to compress the spring 27, orifices 25 are covered and the orifices 26 are coincident with the orifices 23 of the sleeve outside the chamber 24. In this position of the piston, the cylinders are in communication with the atmosphere.

The two cylinders are driven in the direction indicated by the arrows f^1, f^2, respectively by means of two gear wheels 11 and 12 of the same diameter mounted on spindles 5, 6. The trunnions 7, 8, are mounted in suitable bearings 13, 14, rigid with the chamber 9 to which said trunnions are connected by means of packing glands 15, 16; one of these trunnions is adjustable with respect to the other in the same manner and for the same object as the corresponding spindle at the other end of its cylinder.

It may be remarked here that the trunnions 7, 8, may be formed in such a way as to serve as rotary valves replacing the automatically operated valve as described above, and situated between the conduit 10 and the vacuum pump.

The cylinders 1 and 2 specified above may be covered with a suitable resilient covering material (leather, compressed paste-board, rubber or the like), either over the whole of their surface or in the area comprised between two longitudinal lines at either side of the orifices 3 and 4, or on the parts of the cylinders which insure formation of the folds.

Above the cylinders in question is situated a magazine 17 containing the sheets of paper which are to be extracted and folded.

The bottom 18 of this magazine is situated at a small distance from the horizontal tangent plane T—T which is common to the two cylinders 1 and 2, either above this plane or below it according to the nature of the paper to be operated on (i. e. its stiffness, roughness and so forth). The bottom 18 of the magazine has an aperture 19 above the cylinders for enabling the sheet of paper resting on the bottom of the magazine 17 to be extracted from this latter, as will be explained below.

Under the conditions described, the apparatus operates in the following manner:

When the rotary cylinders 1 and 2 occupy a position such that their holes 3 and 4 have passed the imperforate part of the bottom 18 of the magazine 17, the valve mechanism referred to above places the chamber 9 and the interior of the cylinders in communication with the air exhausting machine. The suction produced at the holes 3 and 4 draws down the sheet of paper which rests on the bottom of the magazine, this sheet coming out at the aperture 19 and resting upon the surface of the cylinders along the radial line in which the holes 3 and 4 are disposed.

The rotation of the upper surfaces of the cylinders 1 and 2 towards one another causes the sheet of paper to be carried down inwardly forming a longitudinal loop which becomes converted into a definite fold when it passes through the line of contact at 20 between these cylinders.

Shortly after the fold of the sheet passes this point the valve mechanism above referred to interrupts the connection of the chamber 9 (and consequently of the cylinders 1 and 2) with the exhausting machine, and it connects the chamber 9 and the cylinders with the atmosphere.

The sheet of paper which has been folded then becomes released from the cylinders and falls in the direction indicated by the arrow p, into a magazine or into a suitable receptacle according to the ultimate destination of the sheets of paper.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:

The combination with a magazine for holding a stack of thin sheets of paper and having an opening in its bottom, of means for extracting said sheets successively from the bottom of the stack through said opening and folding them, comprising two parallel cylinders arranged directly beneath the opening in the bottom of the magazine, and means connected with the interiors of said cylinders for alternately exhausting the air therefrom and opening them to the atmosphere at certain stages in their revolution, each of said cylinders having distantly spaced holes therein of small diameter and disposed along a line parallel to its axis and said cylinders being geared together and driven so that their upper surfaces move inwardly towards one another.

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

ROGER BRAUNSTEIN.

Witnesses:
JULES FAYETTE,
ANDRÉ BORDILLON.