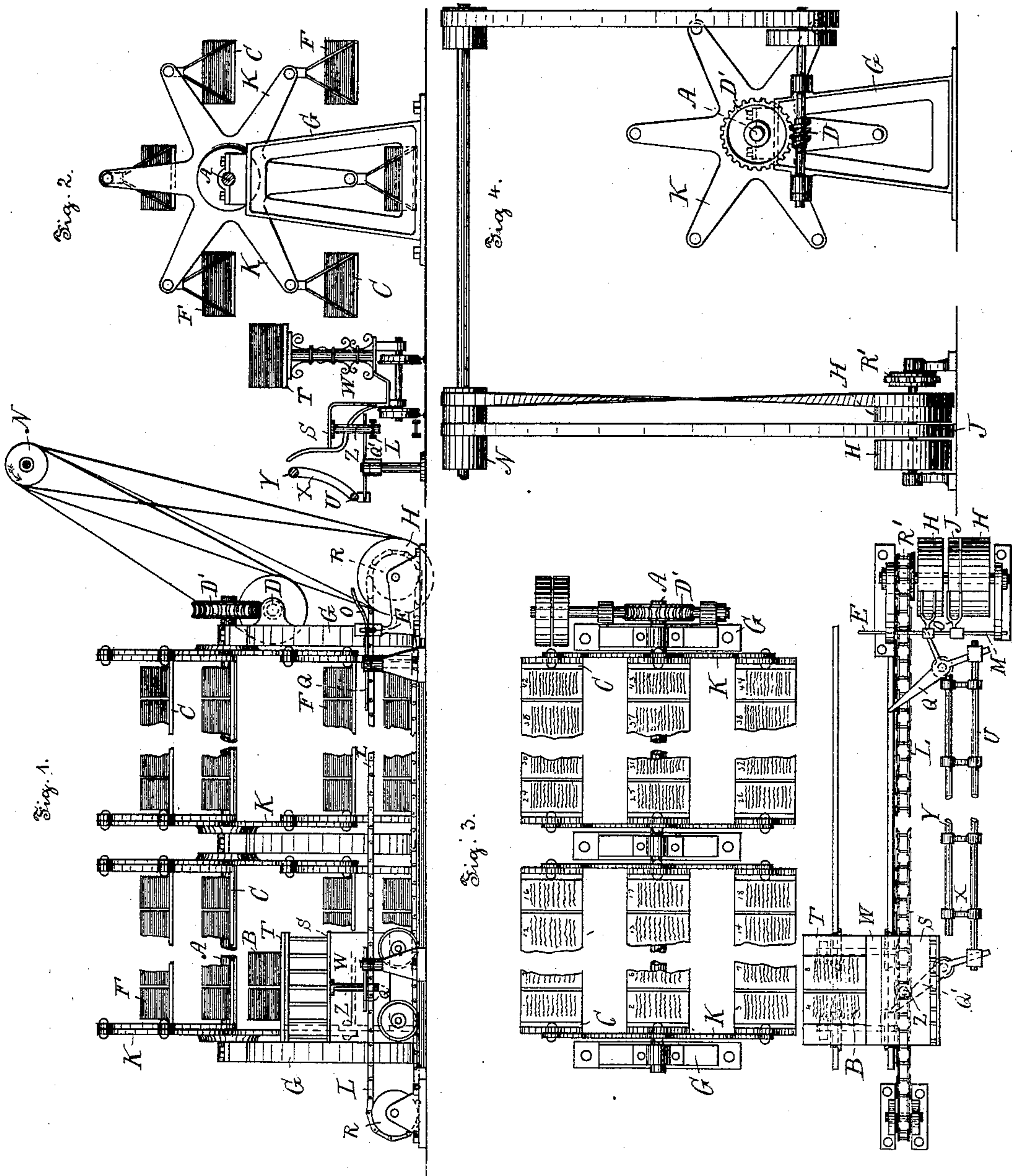


(No Model.)

R. FRICKE & L. SCHÜTZ.
APPARATUS FOR GATHERING AND CLASSIFYING PRINTED AND
FOLDED SHEETS OF PAPER.

No. 428,598.

Patented May 27, 1890.



Witnesses.
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UNITED STATES PATENT OFFICE.

RICHARD FRICKE AND LOUIS SCHÜTZ, OF DRESDEN, GERMANY.

APPARATUS FOR GATHERING AND CLASSIFYING PRINTED AND FOLDED SHEETS OF PAPER.

SPECIFICATION forming part of Letters Patent No. 428,598, dated May 27, 1890.

Application filed January 7, 1890. Serial No. 336,170. (No model.) Patented in England December 7, 1889, No. 19,731.

To all whom it may concern:

Be it known that we, RICHARD FRICKE and LOUIS SCHÜTZ, both subjects of the Emperor of Germany, residing at Dresden, Germany, have invented certain new and useful Improvements in Apparatus for Gathering and Classifying Printed and Folded Sheets of Paper, (for which we filed an application for Letters Patent of Great Britain, No. 19,731, dated December 7, 1889, and which patent has only been sealed under date of January 11, 1890,) of which the following is a specification.

Our invention relates to apparatus for gathering and classifying printed and folded sheets of paper preparatory to their being stitched together to form a book.

The principal object of our invention is to provide a machine of comparatively simple construction for rapidly collecting the printed and folded sheets of paper preparatory to their being stitched together to form a book, and the said machine provided with means adapted to convey the sheets to the spot where they are laid up for the formation of the book or for other purposes, the machine being constructed and arranged so that the operators seated upon sliding seats take the sheets of paper from a pile mechanically carried to them and lay them upon a table adapted to slide along with the seats.

The nature and characteristic features of our invention will be more fully understood from the following description, taken in connection with the accompanying drawings, forming part hereof, and in which—

Figure 1 is a front elevation of a machine embodying the features of our invention. Fig. 2 is a transverse sectional view thereof. Fig. 3 is a top or plan view, and Fig. 4 is a side and front elevational view of the machine.

The machine consists of a carriage W, sliding upon rails and reciprocated over the same by suitable mechanism in any preferred manner. The machine is provided with a seat S and with a table T, adapted to receive the folded sheets as they are taken from the pile in their numerical order; also, with a shaft A, which is mounted in the standards G. To the side arms K of said frame are pivotally suspended tables or platforms C, as shown, for instance, in Fig. 2, and in a similar man-

ner as a Russian swing. These pivotally-suspended tables or platforms carry the respective piles of folded sheets of paper of the different numbers to form the book. During the time required by the arms K to complete one-sixth ($\frac{1}{6}$) of a revolution, to present to the operators each time, a fresh pile is laid upon one of the tables C, the carriage W, with the attendants seated thereon, travels once along the machine. Assuming now that each table or platform C carries a pile of sheets, and so that there are in all twelve piles, the first being numbered 1, the next 2, and so on to the number 12. The operators may then, in completing one journey after another and by taking away a sheet from each pile F, collect one sheet of each number from 1 to 12 and place the sheets in proper order upon the table in front of them, so that the piles B thus formed on the table contain sheets which need only to be stitched together to form the book. During the backward journey of the carriage W the sheets are in the same way taken off the piles on the platforms C and collected in proper order upon the table T. To enable this to take place, the piles of sheets F on the tables or platforms C of the next following suspended table C, pivotally supported to the arm K of the frame, (which in its turn completes one-sixth ($\frac{1}{6}$) of a revolution,) must be moved in the opposite direction, so as to present the sheets to the operators on the opposite side in the proper order—namely, Nos. 13, 14, 15, 16, &c., to 24, whereby, when the backward movement of the carriage is completed, the two piles B upon table T will contain a complete series of sheets from 1 to 24.

To enable the sheets to be taken off the pile F—that is, from the swinging platforms C—and placed in the required order upon table T, so as to form the piles B, it is necessary for the carriage W to travel three times backward and forward during one complete revolution of the revolving frame K; and the sheets forming the piles F upon said platform C must be classified in such order as to suit the reciprocating motion—that is, the numbers must always, for the time being, follow the direction of motion of carriage W. The reciprocating motion is imparted to the carriage W, provided with flanged wheels adapted to run on rails by means of a chain L pass-

ing over sprocket-wheels R. A bolt Z projects downward from the seat S' and engages in and passes through one of the links of said chain L. Motion is imparted to the chain L by means of suitable gearing supported in standards V, and consisting of two loose pulleys H, a narrow fast pulley J, a sprocket-wheel R', and belt-shifting gear M. While the carriage W is at rest an uncrossed band is upon one of the loose pulleys H and another crossed band is upon the other loose pulley. Both these straps receive motion from the driving-pulley N, which also sets in operation the worm D, by which and intermediate straps and pulleys the frame K is caused to revolve.

Upon the bar E, which is supported in suitable brackets, two belt-shifting forks O are mounted, one for the uncrossed and the other for the crossed band, as well as a coupling-pin. This pin catches into the long slot provided in one arm of a cranked lever Q, movable in a horizontal plane. The position of the lever Q always corresponds with that of a double-armed lever Q', owing to the movement of the connecting-rod U. Through the motion of these levers the bar E and the forks O are shifted. When it is required to move the carriage W, one of the driving-belts (the two acting in opposite directions) is passed onto the fast pulley J and the other upon one of the loose pulleys H; but when the carriage W is at rest both belts or straps lie on the loose pulleys H H.

Assuming now that the driving-shaft N is rotating in the direction indicated by the arrow in Fig. 1, then, as shown in Fig. 3, the crossed belt passes onto the fast pulley J, and the carriage W is caused to travel from left to right until the bolt Z meets the free arm of the crank-lever Q and shifts the same into its central position. This brings the bar E, with its forks O, also in the medium position and causes the crossed strap to pass from the fast pulley onto the loose one. Both straps are thus shifted onto the loose pulleys H H, and the carriage W is brought to a standstill. If at this moment one of the operators grasps the hand-lever Y (which is connected by the arms X with rod U connecting the levers) and moves it in such manner that the crank-lever Q entirely completes its stroke the bar E is correspondingly shifted along with its forks O. The uncrossed strap now passes onto the fast pulley J, and the carriage W is caused to travel in the opposite direction until the bolt Z, engaging with the chain L, is brought into contact with the lever Q' and presses upon the latter, so that the uncrossed strap passes onto the loose pulley again. The crossed one is shifted a dis-

tance equal to its width upon its loose pulley. Both straps are thus again passed onto their respective loose pulleys, and by pulling the hand-lever Y the carriage W is set in gear once more. Whenever the carriage completes its movement in either direction, it is reversed by simply actuating the hand-lever Y, which is placed within easy reach of the operator, and the carriage may by the same means be stopped or its motion reversed after stopping, if necessary.

The motion of the star-shaped frame K and of the tables or platforms C C depending therefrom bears such a relation to the motion of the carriage W as that while the swing makes one complete revolution the carriage travels thrice backward and forward. This motion is imparted to said swing or stand by the worm D and the worm-wheel D' in gear therewith and mounted on the shaft A of the star-shaped frame.

Having thus described the nature and objects of our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The combination, with one or more star-shaped frames having tables depending therefrom and adapted for the reception of folded sheets or piles of paper, of a carriage disposed adjacent thereto and means for actuating the same, substantially as and for the purposes described.
2. The combination, with one or more frames mounted in standards and swinging tables attached thereto, of rails, a carriage mounted thereon, and means for permitting of the back-and-forth movement thereof, substantially as and for the purposes described.
3. The combination, with end standards, star-shaped frames journaled thereto, and tables pivotally attached to the outer extremities of said frames, of a carriage provided with a seat and table and means for reciprocating said carriage, substantially as and for the purposes described.
4. The combination, with star-shaped frames journaled to standards and tables or platforms pivoted to and depending from the extremities of said frames, of rails, a carriage provided with a depending bolt Z, and means to actuate said carriage, substantially as and for the purposes described.

In testimony whereof we have hereto set our hands in the presence of the two subscribing witnesses.

RICHARD FRICKE.
LOUIS SCHÜTZ.

Witnesses:

OTTO WOLFF,
BRUNO KÄSSNEY.