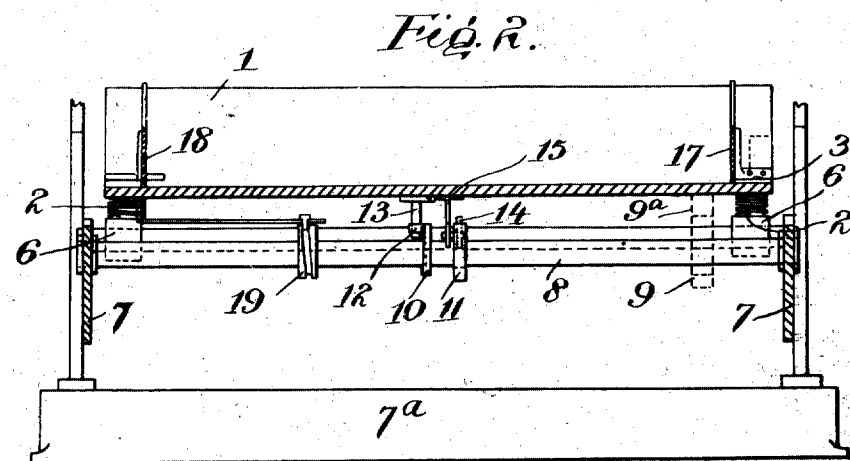
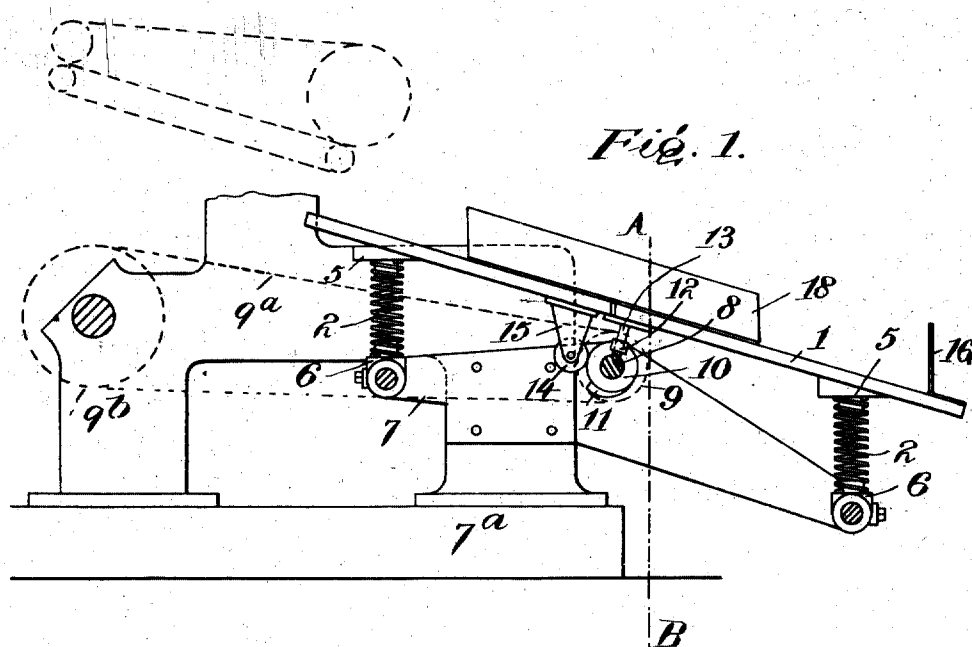


J. P. PETTY & W. C. AYLAND.
 KNOCKING UP SHEETS AND THE LIKE, PARTICULARLY PAPER SHEETS.
 APPLICATION FILED APR. 24, 1916.

1,280,830.

Patented Oct. 8, 1918.
 2 SHEETS—SHEET 1.



Witnesses:

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Inventors:

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 by H. C. Meade, Attorney.

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2 SHEETS—SHEET 2.

Fig. 3.

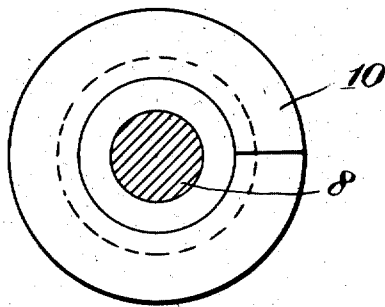


Fig. 4.

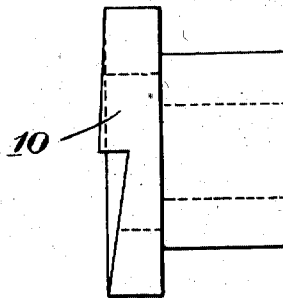


Fig. 5.

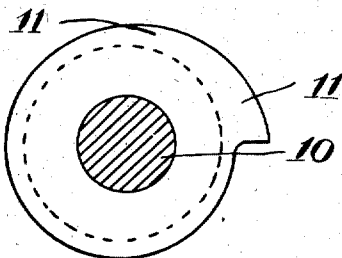


Fig. 6.

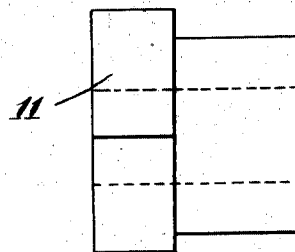


Fig. 7.

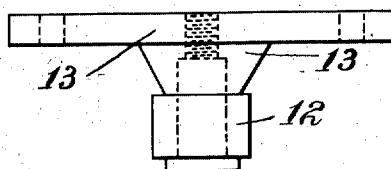


Fig. 8.

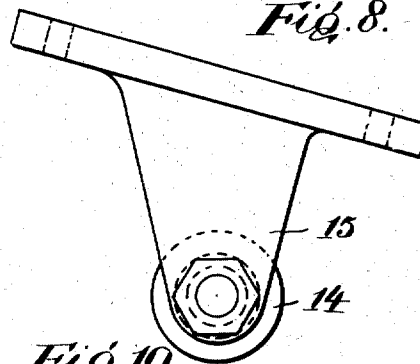


Fig. 9.

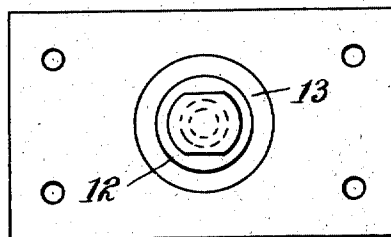
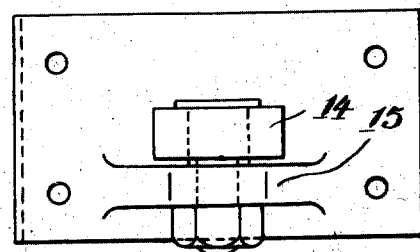


Fig. 10.



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UNITED STATES PATENT OFFICE.

JOHN PAXTON PETTY, OF CROWTHORNE, AND WILLIAM CHRISTOPHER AYLAND, OF
READING, ENGLAND.

KNOCKING UP SHEETS AND THE LIKE, PARTICULARLY PAPER SHEETS.

1,280,830.

Specification of Letters Patent.

Patented Oct. 8, 1918.

Application filed April 24, 1916. Serial No. 93,309.

To all whom it may concern:

Be it known that we, JOHN PAXTON PETTY and WILLIAM CHRISTOPHER AYLAND, subjects of His Majesty the King of England, respectively residing at Crowthorne, Berkshire, England, and Reading, Berkshire, England, have invented certain new and useful Improvements in Knocking Up Sheets and the like, Particularly Paper Sheets, of which the following is a specification.

This invention relates to an improved construction of "knocking up" machine for carrying out the process for "knocking up" sheets of paper or the like described and claimed in the specification of our application for Letters Patent Serial No. 873,598, filed November 23rd, 1914.

By the present invention the sheets or the like which are piled one on the other on a support are subjected to a series of impulses or the like at an angle to the plane of the paper and also to a series of impulses in a direction lying in the plane of the paper and toward the lay edge or edges, by imparting preferably in sequence relatively, gradually and suddenly arrested arcuate swinging movements to a spring mounted support on which the sheets lie, the direction of the relatively gradually arrested movement being away from the lay edge or edges and the direction of the suddenly arrested movements being toward the lay edge or edges. The suddenly arrested movements in the hereinafter described embodiment are arranged to be sharp movements in relation to the gradually arrested movements and to be initiated suddenly. But sharp and suddenly initiated movements may be produced at any local part of the swing.

In an exemplar form of the invention a support with lay fences is mounted elastically at the corners on cylindric spiral springs so as preferably to slope somewhat to one corner and so as to be capable of being horizontally swung with consequent flexure of the spring mounting.

Stops on the board co-act with one or more jumping cams formed so as to produce the aforesaid alternating relatively

gradually and suddenly arrested horizontal swinging movements to the support. Thus a shaft running transversely of the machine may carry both a peripheral jumping cam and a crown jumping cam, each having a gradual rise and a quick fall off and each arranged to co-act with a roller carried by a bracket fast with, and depending from the underside of the board, so as to give a sudden release to the support and admit of sharp and suddenly arrested movements of the support in directions pointing toward the lay fences or in a resultant direction pointing toward the lay corner.

The machine may be arranged with moving joggers or fences so as to subject the sheets to a tapping action serving to also direct them to the lay edge or lay edges.

For the purpose of making our said invention better understood we describe with the aid of the accompanying drawings the exemplar machine hereinabove referred to.

In the drawings:—

Figure 1 is a sectional side view of the machine.

Fig. 2 a sectional front view thereof.

Figs. 3 and 4 are face and edge views respectively of the crown jumping cam.

Figs. 5 and 6 are face and edge views respectively of the peripheral jumping cam.

Figs. 7 and 9 are elevation and plan views respectively of a bracket housing the bowl co-acting with the crown jumping cam, while,

Figs. 8 and 10 are elevation and plan views respectively of a bracket housing the bowl co-acting with the peripheral jumping cam.

Referring to Figs. 1 and 2 the machine comprises a board or support 1 mounted elastically at the corners on cylindric spiral springs 2, so as preferably to slope somewhat to one corner 3, to facilitate the movement of the sheets or the like toward this corner which is made the lay corner, it being desirable in such a case that the board be supported at this corner by a stronger unit spring. The springs 2 engage sets of lugs 5 and 6, the lugs 5 being connected to the table 1 and the lugs 6 to side frames 7 supported on the base 7^a of the machine.

Driven by a suitable drive 9, 9^a, 9^b, is a revolving shaft 8, running transversely of the machine and mounted in the said frames 7, this shaft carrying a crown jumping cam 10 (Figs. 3 and 4) and a peripheral jumping cam 11 (Figs. 5 and 6). As will be observed these cams have a gradual rise and a quick fall off. The cam 10 co-acts with a bowl or roller 12 housed in a bracket 13 (Figs. 7 and 9) fixed to and depending from the underside of the board or support 1. The cam 11 co-acts with a bowl or roller 14 housed in a bracket 15 (Figs. 8 and 10) also fixed to and depending from the underside of the board 1.

Stationary fences 16 and 17 constituting the lay edges are provided on the board 1. These fences are mounted on slides by means of which they may be fixed in any desired position. A movable side jogger 18 is provided coupled to a cam 19 on the revolving shaft 8, whereby movement is imparted to said jogger. Obviously a back movable jogger may be provided for.

Good results have been obtained with such a pair of cams giving one fall off each revolution and each timed to release its stop simultaneously with the other, the shaft and cams thereon revolving at 174 revolutions a minute. Good results have also been obtained by 180 revolutions a minute of the cam shaft and cams, the pair of cams in this case each giving one fall off each revolution, and the peripheral cam releasing at 0° and the crown cam releasing at 40°.

While any suitable arrangement for or mode of feeding the sheets may be employed, one comprising the arrangement according to our aforesaid application for Letters Patent conduces to the obtainment of good results, as the stepped-sequent and rapid individual feed, according to this patent, has the effect that any sheet is quickly settled down onto the board by the succeeding sheets without however preventing the "knocking up" process from leading the sheet to the lay edge or edges before the top-weight bearing on such sheet accumulates sufficiently to count adverse to the process.

Instead of using a pair of cams, *i. e.*, a crown jumping cam and a peripheral jumping cam, a single cam mounted to give diagonal alternating movements of the kind referred to may be employed.

With a construction of machine substantially as herein described we are able to notably promote the directing of sheets in a desired direction while said sheets are kept in a "live" condition and at the same time to realize structural simplicity and manufacturing and up-keeping economies.

What we claim is:—

1. For the purpose of piling sheets according to the process herein referred to, a

machine comprising a support on which the sheets lie, a spring mounting for said support adapted to permit the support to be vibrated to subject the sheets thereon to a series of impulses at right angles to their planes and also to a series of impulses parallel to their planes, sheet edge resting means serving as a dressing fence in bringing said sheets into registry, driving means, means driven from said driving means and adapted to impart gradually and suddenly arrested horizontal swinging movements to the support, the direction of the gradually arrested movements being away from the sheet edge resting means, and the direction of the suddenly arrested movements being toward the sheet edge resting means, and the gradually arrested movements being actual or positive gradually arrested movements completely dependent on the motion of said driven means.

2. For the purpose of piling sheets according to the process herein referred to, a machine comprising a spring mounted support on which the sheets lie, sheet edge resting means serving as a dressing fence in bringing said sheets into registry, and means comprising a stop on the support co-acting with a jumping cam for imparting relatively gradually and suddenly arrested horizontal swinging movements to the support, the direction of the gradually arrested movements being away from the sheet edge resting means and the direction of the suddenly arrested movements being toward the sheet edge resting means.

3. For the purpose of piling sheets according to the process herein referred to, a machine comprising a spring mounted support on which the sheets lie, sheet edge resting means serving as a dressing fence in bringing said sheets into registry, and means comprising stops on the board co-acting with a peripheral jumping cam on the one hand, and a crown jumping cam on the other hand, each cam having a gradual rise and a quick fall off, for imparting relatively gradually and suddenly arrested horizontal swinging movements to the support, the direction of the gradually arrested movements being away from the sheet edge resting means, and the direction of the suddenly arrested movements being toward the sheet edge resting means.

4. For the purpose of piling sheets according to the process herein referred to, a machine comprising a support on which the sheets lie, a spring mounting consisting of cylindric spiral springs for said support adapted to permit the support to be vibrated to subject the sheets thereon to a series of impulses at right angles to their planes and also to a series of impulses parallel to their planes, sheet edge resting means serving as

a dressing fence in bringing said sheets into registry; driving means, means driven from said driving means and adapted to first bodily move said support to flex said springs
5 with a gradually arrested movement completely dependent on the motion of said driven means, and then to quickly release

the support and produce a suddenly arrested return movement of the support in a direction toward the sheet edge resting means. 10

In testimony whereof, we affix our signatures.

JOHN PAXTON PETTY.

WILLIAM CHRISTOPHER AYLAND.