

Sheet 1, 2 Sheets

G. L. Wright.
Paper Mach.

N^o 5,071.

Patented Jul. 18, 1848.

Fig 1

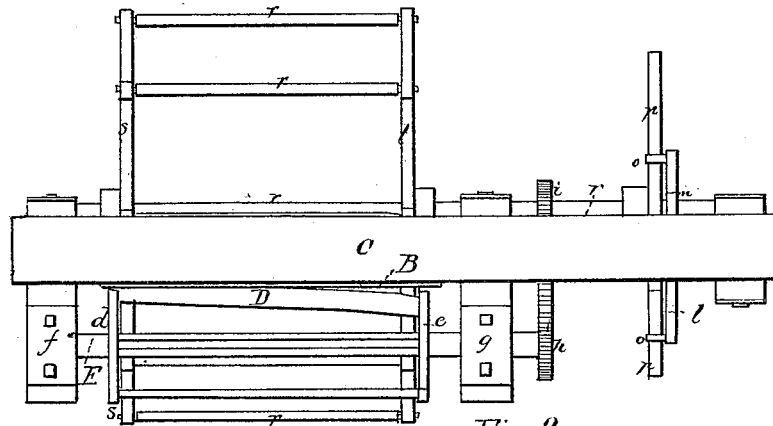
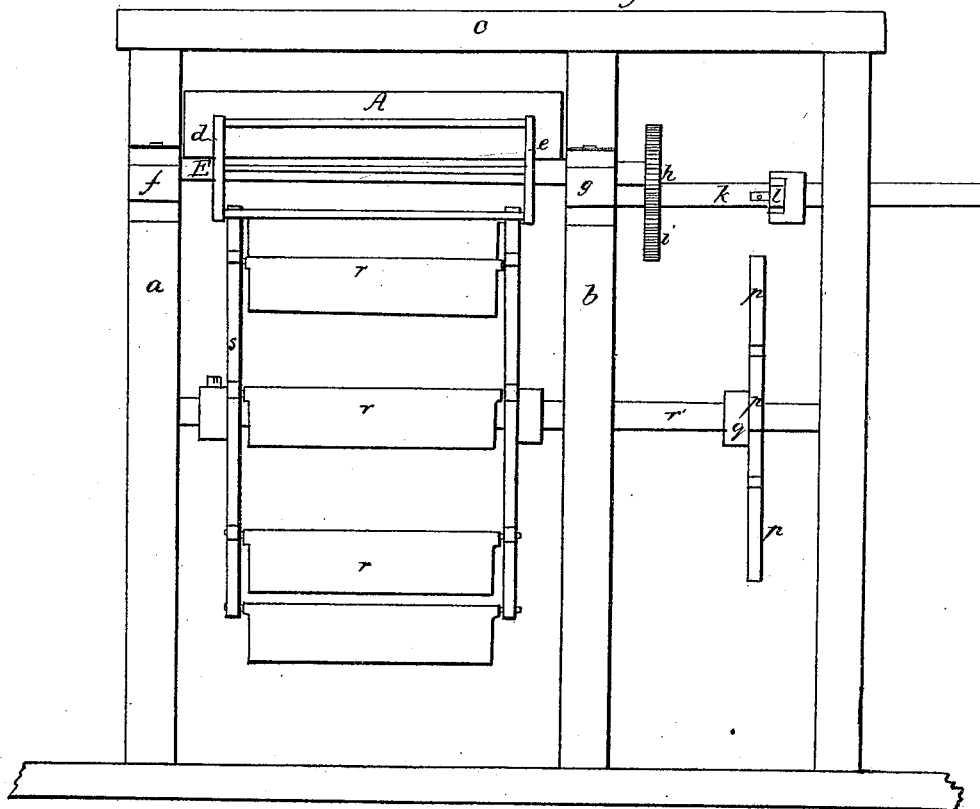


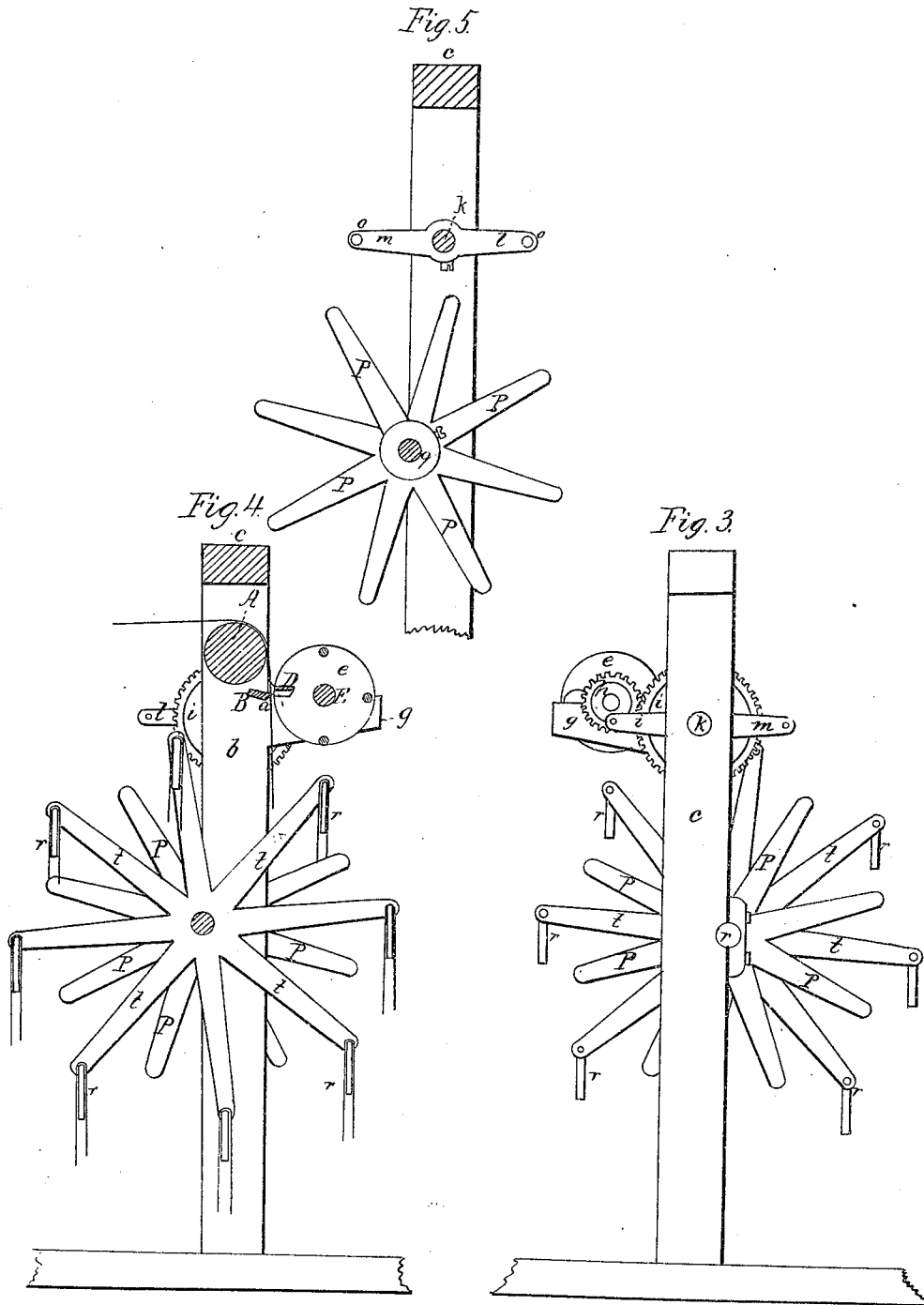
Fig 2



G. L. Wright Paper Mach.

No. 5,671.

Patented Jul. 18, 1848.



UNITED STATES PATENT OFFICE.

GEORGE L. WRIGHT, OF SPRINGFIELD, MASSACHUSETTS.

MACHINERY FOR CUTTING PAPER.

Specification of Letters Patent No. 5,671, dated July 18, 1848.

To all whom it may concern:

Be it known that I, GEORGE L. WRIGHT, of Springfield, in the county of Hampden and State of Massachusetts, have invented a new and useful improvement or contrivance to be applied to machines for making paper in a continuous strip or web, the said improvement or contrivance, which may be termed an "automatic lay-boy," being for the purpose of receiving the sheets of paper cut off by the shears and laying or piling them on one another in a pack or series of packs and by so doing to render unnecessary the employment of an attendant or person usually denominated the "lay-boy."

My said improvement or that part of it which I term the series of rotating, gravitating receivers, may also be used to advantage in connection with automatic printing machines, for the purpose of removing from the press, and piling or packing the sheets of paper after they are successively printed.

It is fully described and represented in the following specification, and accompanying drawings, letters, figures and references thereof.

Of said drawings, Figure 1, denotes a top view of my said apparatus, as disposed under the shears of a paper making machine. Fig. 2, is a front elevation of it. Fig. 3, is an end elevation. Fig. 4, is a vertical cross section. Fig. 5, is a transverse section of the two shafts of the machine, exhibiting the arms projecting therefrom, and by the combined operation of which the series of rotating gravitating receivers is made to revolve.

A, in said drawings exhibits a guide roller, over which the continuous web or sheet of paper is made to pass, as it leaves the paper making machine. Directly underneath the said roller is placed, what is called the bed knife (B) which consists of a long blade of steel, having a sharp cutting edge *a'*, the said knife being made to extend from one post *a*, to the other *b*, of the frame C. In connection with said bed knife and directly in front of it, is placed a revolving spiral or twisted shear or cutting knife, D, which is supported in position, by two circular heads *d*, *e*, affixed upon a horizontal shaft E, the journals of which are supported, and revolve in boxes or bearings *f*, *g*, made to project from the frame C. On one end of the shaft E is a toothed pinion or gear *h*, which is made to engage with another and larger one *i*, fixed on a short horizontal driving shaft *k*,

to which motion is given by power applied to a crank or to any other proper mechanism. From said shaft *k* two arms *m*, *l*, are made to project in opposite directions as seen in Fig. 5, each of said arms having a small stud or pin *o*, inserted in or near its outer end, and made to stand at right angles to its arm as seen in the drawings. Said two studs and arms, operate in connection with, and give motion to a series of eight or any other suitable number of arms *p*, *p*, &c., projecting at equal distances apart from a hub, *g*, fixed on the horizontal shaft *r'* of the automatic lay boy, or series of rotating gravitating receivers, *r*, *r*, *r*, &c. Each of said receivers consists of a board or plate of metal, suspended by journals, (at its two upper corners,) to two of two series of arms *s*, *s*, &c., *t*, *t*, &c., fixed upon or made to radiate from the shaft *r'*, the journals of each of said receivers being made to freely revolve in boxes or bearings made in their respective arms. The said journals should be so disposed that the center of gravity of each board may be below the common line or axis of the two journals, and each of the said boards should be heavy enough, to always take or assume and maintain a vertical position throughout its rotation around the shaft *r'*, the vertical positions of the several gravitating boards or receivers being exhibited in the drawings, there being the same number of said receivers as arms *p*, *p*, &c.

While the driving shaft is revolving, the two studs *o*, *o*, are made in succession to come in contact with the arms *p*, *p*, &c. When either of said pins is carried around and first meets the upper end of any one of the said arms *p*, *p*, &c., four of the arms, *s*, *t*, *s*, *t*, underneath the bed knife should stand in vertical positions, or all together with their two gravitating receivers be in a vertical plane, situated at some distance in rear of the bed knife. The said stud *o*, being supposed to be carried around, or being made to rotate around the axis of the driving shaft, presses against the arm *p*, with which it is in contact, and partially rotates the shaft *r'*, and series of gravitating receivers, and so far as to carry the succeeding or second gravitating receiver into a vertical plane with its two arms, and bring the same into the aforesaid vertical plane in rear of the bed knife, in which position it will remain stationary, from the time the pin or stud last mentioned, departs from the arm

against which it was acting, to the time when the next pin or stud *o*, meets the succeeding arm *p*. Thus by the rotation of arms of the driving shaft, and the peculiar
 5 action of their studs, upon the arms *p*, *p*, &c., of the shaft *r'*, the series of gravitating receivers, are alternately put in partial revolution around the shaft *r'*, and caused to rest stationary.

10 The rotatory motions of the cutting knife *D* should be regulated in such respect to the velocity with which the web of paper passes out from the paper machine, and over the guide roller *A*, as to cut or sever from the
 15 web a sheet of paper at each of its (the knife *D*'s) revolutions.

After the web of paper passes over and beyond the roller *A*, it depends or hangs down between the bed knife, and the rotary
 20 knife. The motions of the series of gravitating receivers should be so timed that one of said receivers may be brought around, so as to receive each sheet, as it is made and cut off from the web, and as each gravitating
 25 receiver comes up to the position where it is to remain stationary, it should be moved with a velocity so proportioned to that of the endless web of paper, that one half of the sheet to be cut off or separated from the
 30 web, may hang down from the rear side of the receiver. Now while the receiver remains stationary the web still continuing in motion, will drop fall or hang in front of the receiver, and when the rotary knife separates, the part so pending from the rest of
 35 the web, it, by its own gravity, will fall down in front of the receiver. Thus the sheet will lay upon the receiver, one half hanging down on one side of it, and the
 40 other half hanging down on the other side of it, as denoted by the blue lines in the cross section in Fig. 4.

The object of suspending the receiving boards, as above described, so as to cause
 45 them to always maintain their vertical positions during their revolutions around the shaft *r'*, is to enable them, to retain the sheets, and from a series of packs thereof, during their rotations around the shaft.
 50 Were one in lieu of them to use round rods or bars, of any shape fastened into the arms, so as not to be movable in the manner as above described they would so act on the sheets, or packs, as to cause them to soon
 55 fall off.

By my improvement, or by the use of the weighted gravitating bar or receiver, or a bar made by any suitable mechanism to maintain itself in a vertical plane as above
 60 described, during its revolution about the shaft *r'*, the sheets are preserved from fall-

ing off, and as they are laid successively they form what I term a pack, which on being removed from the bar will be found to have the edges of the sheets, very evenly dis- 65 posed over those below them. I am not obliged to make use of any holding board, spring or flap, in connection with the receiver, for confining the sheets thereon. I do not intend to confine my invention to the 70 employment of the gravitating power of the boards or receivers, to cause them to maintain themselves in vertical planes, during their rotations around their common shaft, as I am aware that other means may be adopt- 75 ed to cause them to always preserve their vertical positions. I therefore intend to make use of any or all such means, but I consider the employment of the suspended or pendant bars, or the power of gravity for 80 the purpose of keeping said bars or boards vertical, as the simplest mechanical mode of producing the desired effect.

In such paper machines as I have seen, the rotary knife of the shears has been 85 placed directly or very nearly underneath the bed knife. I arrange mine directly in front of the bed knife, so as to enable me to bring the series of gravitating receivers very near to the bed knife as seen in the draw- 90 ings.

I lay no claim to the use of a receiver, such as heretofore been adopted to take the paper from the cutting apparatus or shears, but that which I do claim is— 95

1. The employment, or combination with the cutting shears, of one or more of the aforesaid gravitating receivers, or receivers made to always maintain their vertical positions, during their rotation around their 100 common shaft or axis, and to operate in connection with the cutting shears, substantially as described, and whether said receiver or receivers be made to rotate through the whole or part of the circle, whose center is 105 in the shaft of its arms as above specified.

2. I also claim the peculiar manner in which I have arranged the series of rotating gravitating receivers, the bed knife, and the rotating shears knife, in order that I may 110 be enabled to work the series of receivers, closer up to the bed knife, than when the shaft of the rotary knife is disposed below the bed knife, in the manner in which it has usually been arranged. 115

In testimony whereof I have hereto set my signature this fifth day of August A. D. 1847.

GEO. L. WRIGHT.

Witnesses:

E. D. BEACH,
 JAMES H. MORTON.