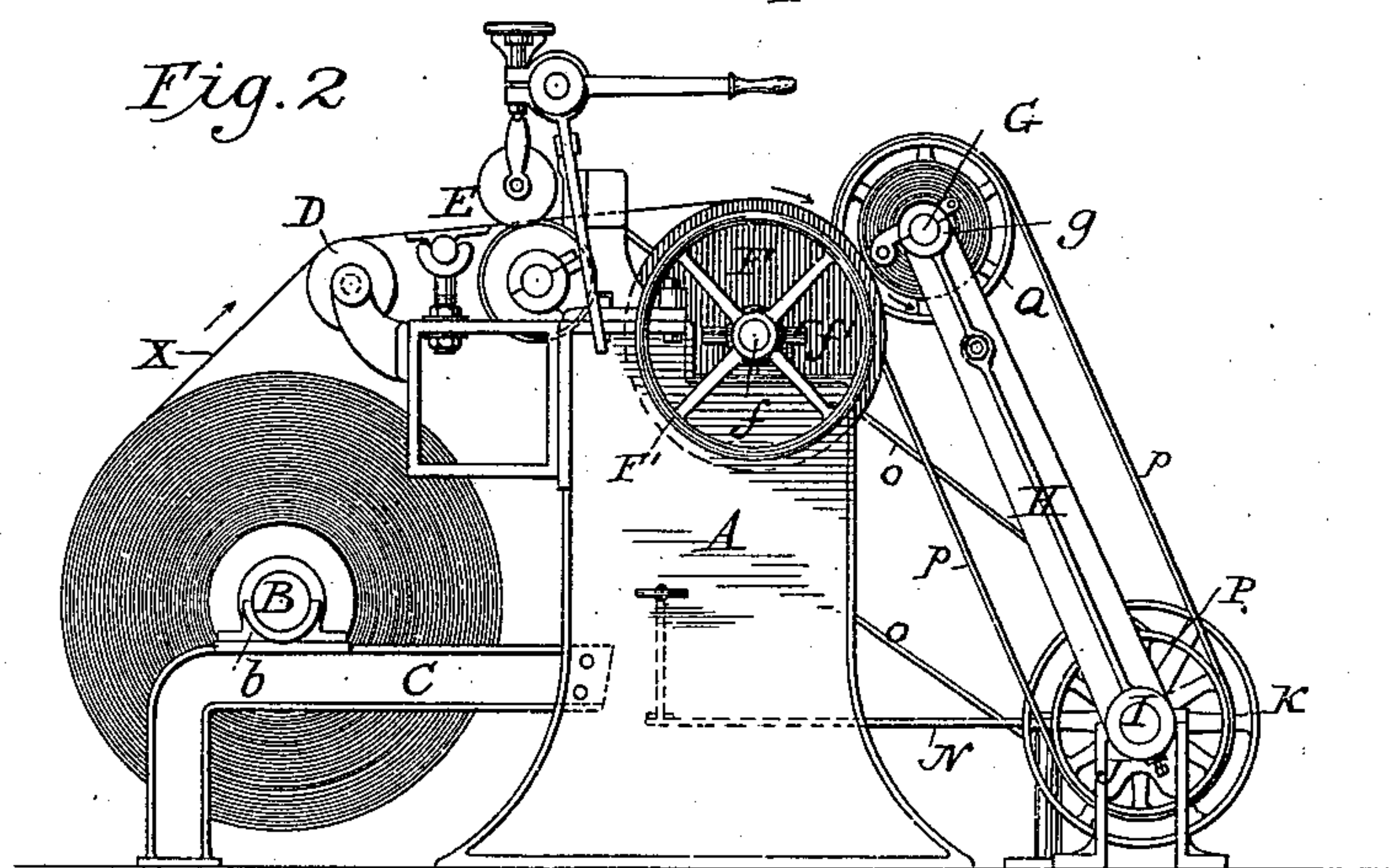
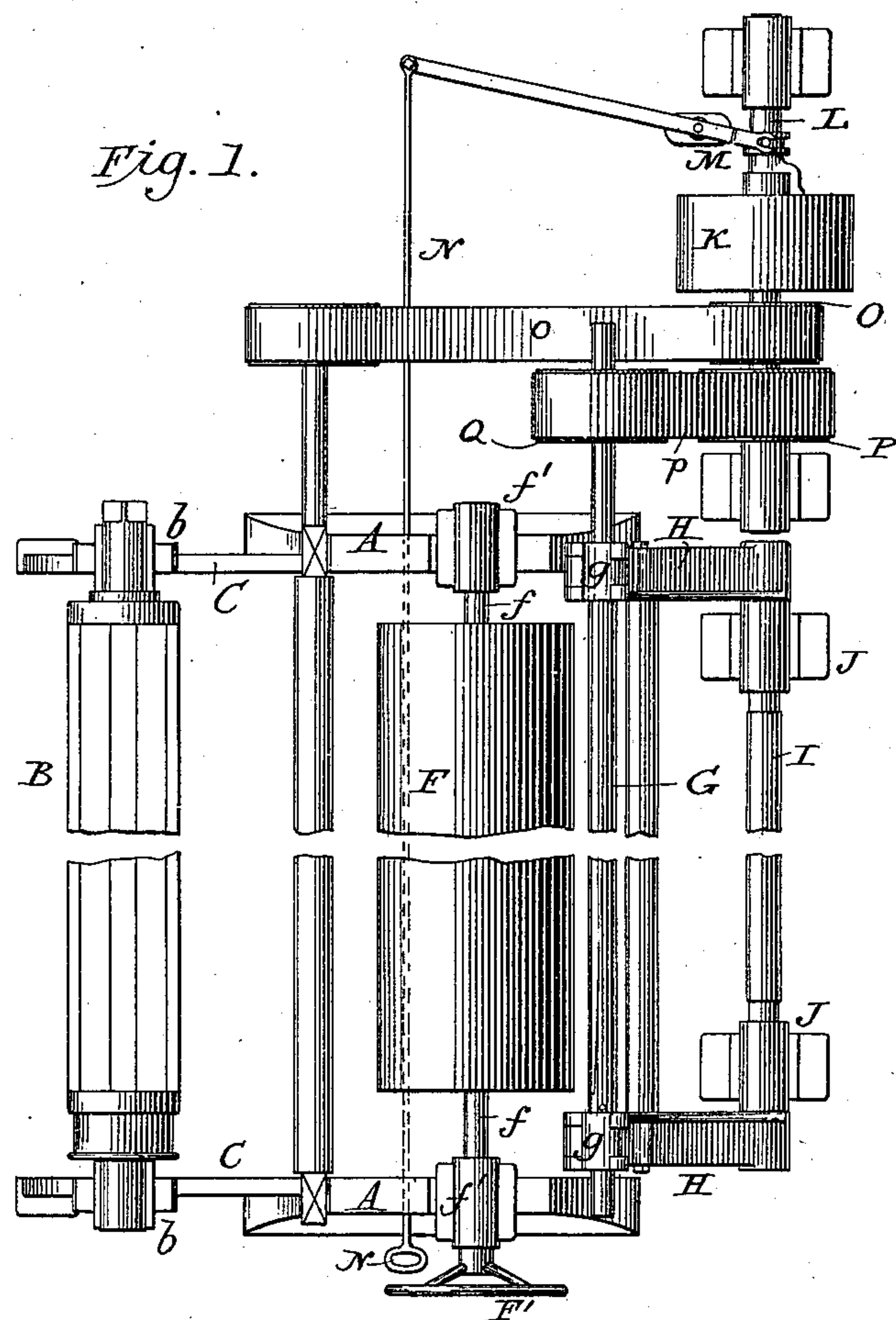


(No Model.)

N. H. BROKAW.  
MACHINE FOR WINDING PAPER.

No. 545,449.

Patented Sept. 3, 1895.



Witnesses,

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# UNITED STATES PATENT OFFICE.

NORMAN H. BROKAW, OF KAUKAUNA, WISCONSIN.

## MACHINE FOR WINDING PAPER.

SPECIFICATION forming part of Letters Patent No. 545,449, dated September 3, 1895.

Application filed December 31, 1894. Serial No. 533,481. (No model.)

*To all whom it may concern:*

Be it known that I, NORMAN H. BROKAW, a citizen of the United States, residing at Kaukauna, in the county of Outagamie and State of Wisconsin, have invented certain new and useful Improvements in Machines for Winding Paper, of which the following is a specification.

My improvements especially relate to machines for dividing sheet-paper fed from a large wide roll into relatively narrow sheets and rewinding them in smaller rolls on a separate shaft. Ordinarily the paper is fed from the large roll through a slitting apparatus and then wound directly in smaller rolls on a shaft. It is also quite common in this class of apparatus to pass the paper from a large roll through slitting apparatus, over a drum or cylinder, and onto a rewinding-shaft, power being applied to the drum or cylinder, the rewinding-shaft being driven by friction from the drum and being arranged in sliding boxes to enable it to recede from the cylinder as the rolls of paper on it increase in diameter. According to my invention I may employ ordinary slitting apparatus and an ordinary drum or cylinder; but power is not applied to the drum in my invention. I mount the rewinding-shaft on swinging arms so arranged as to present the rewinding-shaft to the surface of the cylinder, and I provide gearing for positively driving the rewinding-shaft from a shaft in line with the axis about which the arms which carry the rewinding-shaft swing. By this arrangement I am enabled to wind the paper more tightly, prevent looseness at the center of the roll, and a consequent tendency to telescope. The organization which I employ prevents the rewinding-shaft from springing, the drum, in connection with the swinging arms, preventing the paper from pulling unduly on the shaft and also preventing the paper from being wound unevenly or being torn.

In the accompanying drawings, Figure 1 is a plan view of a machine embodying my improvements, with the slitting apparatus removed; and Fig. 2 is a side elevation thereof.

The main frame A may be of any suitable construction adapted to support the mechanism. A shaft B, on which the unslit roll of paper is wound, is mounted in suitable bear-

ings b on standards C, projecting from one end of the frame. The paper X from the shaft B passes over a guide-roller D and thence through slitting apparatus E, which may be of any suitable well-known construction and the details of which form no part of my present invention.

A drum or cylinder F on a shaft f is mounted in suitable bearings f' on the top of the frame A, and this shaft may be provided with a hand-wheel F'. An expansion-shaft G, of suitable well-known construction, is mounted in bearings g at the upper ends of a pair of arms H, the lower ends of which are mounted on a shaft I, mounted in a frame J. The shafts G and I are located a proper distance apart to hold the rewound paper in a suitable relative position to the cylinder F—such that the paper shall pass over the top of the cylinder downwardly a short distance and then under the shaft G. The arms H are free to swing toward and from the cylinder, and as the diameter of the paper on the shaft G increases the arms H swing in the direction indicated by the arrow—away from the cylinder. The weight of the arms and parts carried thereby is, however, sufficient to insure such a frictional contact between the paper on the shaft G and the cylinder F as to drive the latter coincidently with the shaft G.

Power is applied to a driving-pulley K on a shaft L in the same axial line with the shaft I, but not connected therewith.

Suitable clutch mechanism M, operated by rods and levers N, may be employed for connecting and disconnecting the driving-pulley K with the shaft L, which is provided with a pulley O, connected by a belt o with the slitting apparatus, and a pulley P, connected by a belt p with a pulley Q on the shaft G. As the axis of the driving-shaft L coincides with the axis of the shaft I, about which the arms H move, the shaft G may be continuously revolved, no matter what may be its position with reference to the cylinder F. The shaft B revolves freely and the paper unwinds from the roll without hinderance. The drum C is of large area, presenting an extended surface to the web of paper which it supports immediately before it is wound onto the rewinding-roll.

Care is taken in this machine to avoid un-



due tension, which would tend to stretch the paper and thus tear it. The guides, it will be observed, are all beneath the paper and are not arranged over it, so as to press it down 5 and form loops in it, which would tend to stretch it.

So far as I am aware in this class of machines the rewinding-shaft has never before been mounted in swinging arms and posi- 10 tively driven, as above described, and

What I claim is—

1. The combination, substantially as here-  
inbefore set forth, a main frame, an unim-  
peded, freely revolving shaft for supporting 15 a roll of paper to be re-wound, of a frictionally driven drum over which the paper to be re-wound passes, and a positively driven re-winding shaft mounted to recede from the drum as the diameter of the paper wound on 20 the shaft increases, said drum being so mounted that it supports the re-winding shaft to relieve it from the weight of the paper and to prevent it from springing or bending.

2. In a machine for re-winding paper, the 25 combination of a main frame, an unimpeded, freely-revolving shaft for supporting a roll of paper to be rewound, a re-winding shaft, swinging arms on which this shaft is mounted, a driving shaft in line with the axis about 30 which the arms swing, driving connections

between the driving shaft and re-winding shaft, whereby the latter is positively re-  
volved to wind the paper upon it, and a drum  
over which the paper to be re-wound passes 35  
and which supports the weight of the re-wind-  
ing shaft and the roll of paper thereon, there-  
by preventing the shaft from springing or  
bending.

3. The combination, substantially as here-  
inbefore set forth, of a main frame, a shaft 40  
for supporting a roll of paper to be slit and  
re-wound, slitting apparatus through which  
the paper passes, a shaft on which the paper  
in smaller rolls is re-wound, swinging arms  
on which the re-winding shaft is mounted, a 45  
driving shaft in line with the axis about  
which the arms swing, a pulley on the driv-  
ing shaft connected by belt gearing with a  
pulley on the re-winding shaft, a cylinder of  
large surface area mounted in bearings be- 50  
low the bearings of the re-winding shaft and  
arranged to support the re-winding shaft and  
the roll of paper thereon to prevent it from  
springing or bending.

In testimony whereof I have hereunto sub- 55  
scribed my name.

NORMAN H. BROKAW.

Witnesses:

F. A. TOWSLEY,  
P. W. REUTER.