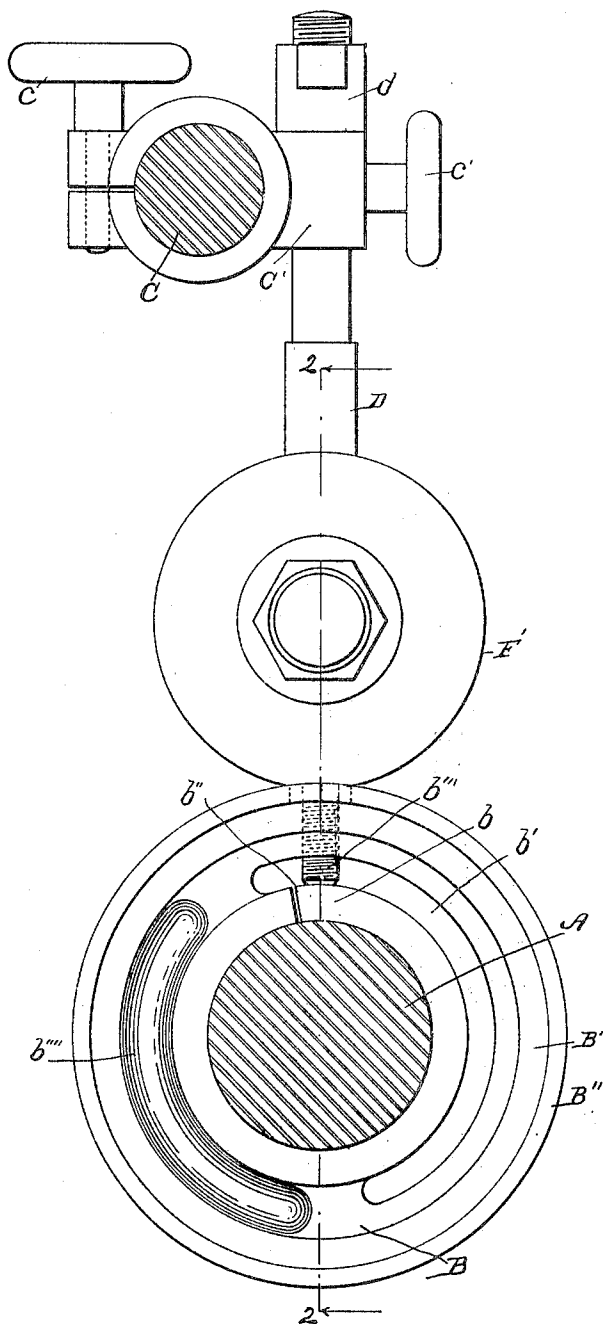


No. 802,572.

PATENTED OCT. 24, 1905.

J. F. KING.
PAPER CUTTER.
APPLICATION FILED FEB. 17, 1905.

2 SHEETS—SHEET 1.



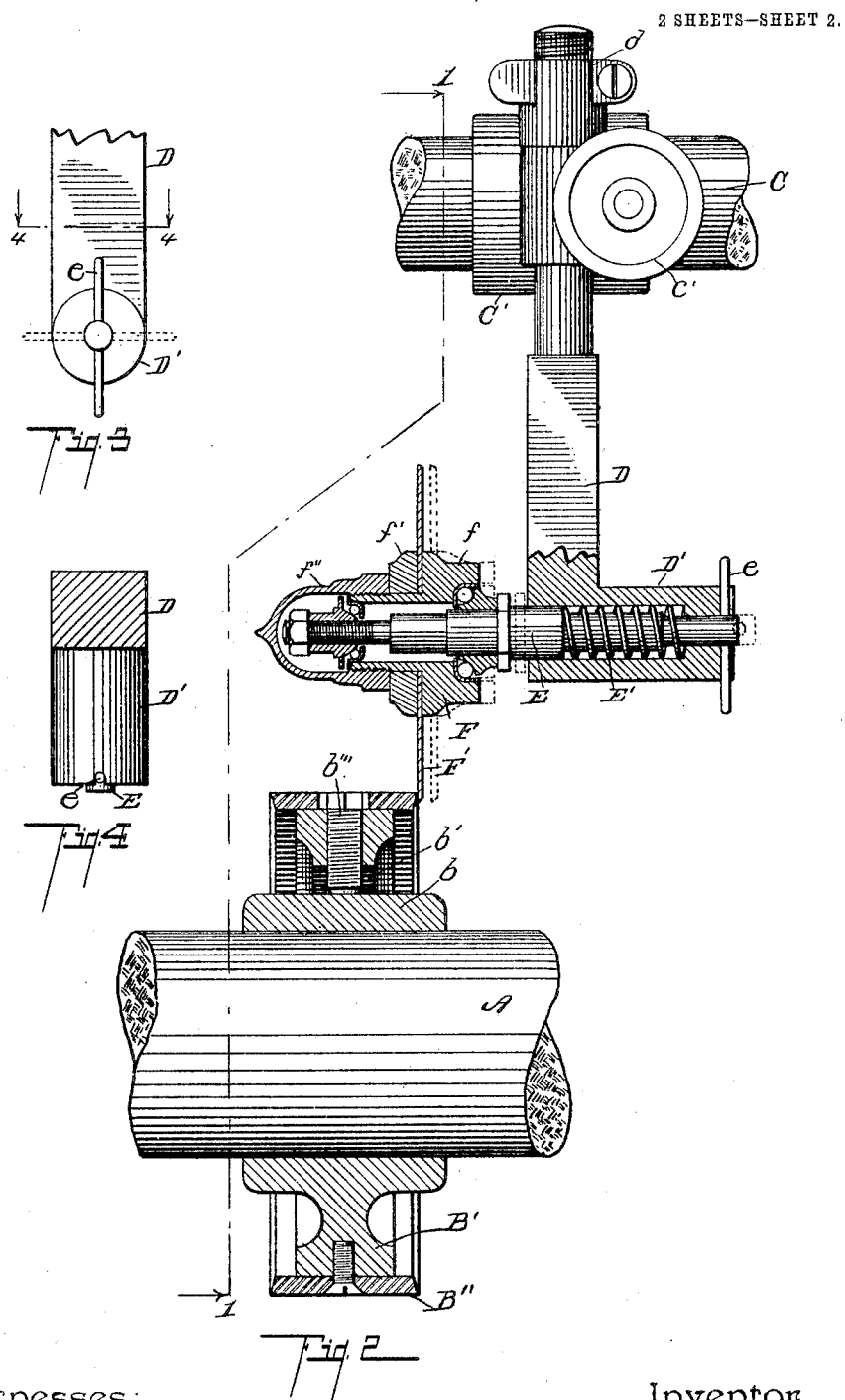
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APPLICATION FILED FEB. 17, 1905.



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UNITED STATES PATENT OFFICE.

JOHN F. KING, OF KALAMAZOO, MICHIGAN.

PAPER-CUTTER.

No. 802,572.

Specification of Letters Patent.

Patented Oct. 24, 1905.

Application filed February 17, 1905. Serial No. 246,134.

To all whom it may concern:

Be it known that I, JOHN F. KING, a citizen of the United States, residing at the city of Kalamazoo, in the county of Kalamazoo and State of Michigan, have invented certain new and useful Improvements in Paper-Cutters, of which the following is a specification.

This invention relates to improvements in paper-cutters. It is particularly adapted for use in paper-cutting machines or as an attachment for paper-manufacturing machines where a series of cutters or slitters are used. It is, however, desirable for use in other relations.

The objects of this invention are, first, to provide an improved paper cutting or slitting machine in which the cutters may be readily adjusted to meet the requirements of the particular case in hand; second, to provide an improved paper cutting or slitting machine in which rotary cutters are used in which the cutters may be readily and quickly adjusted in relation to each other; third, to provide in a paper cutting or slitting machine improved means for securing the cutters in position.

Further objects and objects relating to structural details will definitely appear from the detailed description to follow.

I accomplish the objects of my invention by the devices and means described in the following specification.

The invention is clearly defined, and pointed out in the claims.

A structure embodying the features of my invention is clearly illustrated in the accompanying drawings, forming a part of this specification, in which—

Figure 1 is a detail sectional view of a structure embodying the features of my invention, taken on the broken line 1 1 of Fig. 2. Fig. 2 is a detail view, partially in section, to show structural details, taken on line 2 2 of Fig. 1. Fig. 3 is a detail view showing the lower portion of the hanger for the upper cutter and means for adjusting the same to and from the lower cutter. Fig. 4 is a detail sectional view taken on line 4 4 of Fig. 3.

In the drawings the sectional views are taken looking in the direction of the little arrows at the ends of the section-lines, and similar letters of reference refer to similar parts throughout the several views.

Referring to the drawings, the lower cutters B are carried by the shaft A. The upper cutters F are carried by the bar or rail C.

This bar or rail C is arranged parallel to the shaft A.

Although in practice the cutters are usually arranged in series, I have illustrated only one set of cutters, as they are substantially duplicates. The cutters are secured to the shaft B and rail C, so that they may be adjusted to cut strips of varying widths or to trim strips of varying widths. The lower cutter B is made up of a wheel portion B' and a rim portion B'', which is secured thereon by suitable screws arranged through the rim. This rim B'' is a steel ring and coacts with the cutting-disk F' of the upper cutter F in the manner of the well-known rotary shears or cutters. The web of the wheel B' of the lower cutter has a slot B' formed therein, and its hub b is split at b''. A set-screw b''' is arranged through the rim to engage the hub b at a point adjacent to the slit therein, so that the hub may be clamped upon the shaft. The cutter is thus secured to the shaft very effectively, and at the same time the shaft is not abraded or roughened by the repeated adjustments, as is the case where set-screws engaging the shaft are used as a means for securing the cutters on the shaft, as is the common practice.

Another advantage is—and this is also one of very great importance—that the cutter has no projecting parts to engage the paper trimmings and the like to cause them to wind upon the shaft.

The web of wheel B' is cored away at b''' opposite the slot B', so as to keep it in perfect balance. This reduces the vibrations of the shaft to a minimum, which is of very great advantage in a structure of this class.

The upper cutter F is provided with a cutting-disk F', which, as before stated, coacts with the rim B'' of the lower cutter in forming a shear-cut. The cutting-disk F' is mounted on a hub, the barrel portion f; the ring f', and the cap f''. The cutting-disk F' is clamped between a suitable shoulder on the hub-band f and the ring f', which is secured thereon by the cap f'', which is threaded onto the outer end of the band. With the parts thus arranged the disk F' is secured so that the cutter may be quickly assembled for renewing or sharpening the cutter-blade. The cutter is provided with suitable ball-bearings.

The spindle E of the cutter F is supported by the hanger D, which is provided with a laterally-disposed tubular arm D', through which the spindle is arranged. The spindle

is returned to the hanger by a pin *a*, which is arranged transversely through the projecting end thereof. A coiled spring *E'*, which is arranged in the arm *D'* of the hanger, holds the cutter *F* yieldingly in contact with the lower cutter *B*. The end of the arm *D'* is grooved to receive this pin. When it is desired to hold the cutter *F* out of contact with the lower cutter, the pin is withdrawn from the groove and turned to engage the end of the arms, as is indicated by dotted lines in Fig. 3. This holds the cutter *F* in the position indicated by dotted lines in Fig. 2.

The hanger *D* is secured to the rail *C* by the clamp *C'*. This clamp consists of a split sleeve for the rail and a split sleeve for the hanger, which is arranged transversely to the rail-sleeve. Suitable hand-screws *c* and *c'* are provided for clamping these sleeves upon the rail and the hanger, respectively.

The upper end of the hanger *D* is threaded and provided with a nut *d*, by means of which it is vertically adjusted. By arranging the parts as I have illustrated and described they may be very quickly and easily adjusted.

I have illustrated and described my improved paper-cutter in detail in the form preferred by me on account of its structural simplicity and economy and convenience in use. I am, however, aware that it is capable of very considerable variation in structural details without departing from my invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination with a shaft of a cutter member consisting of a wheel having a split hub with a slot in its web partially encircling said hub; a rim of steel for said wheel; a set-screw arranged through the rim of said wheel adapted to engage said split hub whereby the same may be clamped upon said shaft; a cutter member consisting of a cutting-disk; a hub therefor made up of a barrel portion having a shoulder at its inner end; a ring sleeved upon said barrel, and a cap threaded on the outer end of said barrel adapted to clamp said parts together; a spindle; a hanger for said spindle having a tubular arm at its lower end adapted to receive the same; a spring arranged within said arm, adapted to hold said spindle normally outward; a pin transversely arranged through the inner projecting end of said spindle, engaging said arm to retain said spindle therein; a groove in the end of said arm, adapted to receive said pin; a supporting-rail for said hanger; a clamp, consisting of a split sleeve adapted to receive said hanger, and a split sleeve adapted to receive said rail; hand-screws for said sleeves; and a nut threaded upon the upper end of said hanger for adjusting the same vertically, for the purpose specified.

2. The combination with a shaft of a cutter member consisting of a wheel having a split

hub with a slot in its web partially encircling said hub; a rim of steel for said wheel; a set-screw arranged through the rim of said wheel adapted to engage said split hub whereby the same may be clamped upon said shaft; a cutter member consisting of a cutting-disk; a hub therefor made up of a barrel portion having a shoulder at its inner end; a ring sleeved upon said barrel and a cap threaded on the outer end of said barrel adapted to clamp said parts together; a spindle; a hanger for said spindle having a tubular arm at its lower end adapted to receive the same; a spring arranged within said arm adapted to hold said spindle normally outward; a pin transversely arranged through the inner projecting end of said spindle, engaging said arm to retain said spindle therein; a groove in the end of said arm adapted to receive said pin; a supporting-rail for said hanger; a clamp consisting of a split sleeve adapted to receive said hanger, and a split sleeve adapted to receive said rail; and hand-screws for said sleeves, for the purpose specified.

3. The combination with a shaft of a cutter member consisting of a wheel having a split hub with a slot in its web partially encircling said hub; a rim of steel for said wheel; a set-screw arranged through the rim of said wheel adapted to engage said split hub whereby the same may be clamped upon said shaft; a cutter member consisting of a cutting-disk; a hub therefor made up of a barrel portion having a shoulder at its inner end; a ring sleeved upon said barrel, and a cap threaded upon the outer end of said barrel adapted to clamp said parts together; a spindle; a hanger for said spindle having a tubular arm at its lower end adapted to receive the same; a spring arranged within said arm adapted to hold said spindle normally outward; a pin transversely arranged through the inner projecting end of said spindle, engaging said arm to retain said spindle therein; a groove in the end of said arm adapted to receive said pin; a supporting-rail for said hanger; and a clamp for adjustably securing said hanger to said rail, for the purpose specified.

4. The combination with a shaft of a cutter member consisting of a wheel having a split hub with a slot in its web partially encircling said hub; a rim of steel for said wheel; a set-screw arranged through the rim of said wheel adapted to engage said split hub whereby the same may be clamped upon said shaft; a cutter member consisting of a cutting-disk; a hub therefor made up of a barrel portion having a shoulder at its inner end; a ring sleeved upon said barrel, and a cap threaded on the outer end of said barrel adapted to clamp said parts together; a spindle; a hanger for said spindle having a tubular arm at its lower end adapted to receive the same; a spring arranged within said arm, adapted to hold said spindle normally out-

ward; a supporting-rail for said hanger; a clamp consisting of a split sleeve adapted to receive said hanger, and a split sleeve adapted to receive said rail; hand-screws for said sleeves; and a nut threaded upon the upper end of said hanger for adjusting the same vertically, for the purpose specified.

5. The combination with a shaft of a cutter member consisting of a wheel having a split hub with a slot in its web partially encircling said hub; a rim of steel for said wheel; a set-screw arranged through the rim of said wheel adapted to engage said split hub whereby the same may be clamped upon said shaft; a cutter member consisting of a cutting-disk; a hub therefor made up of a barrel portion having a shoulder at its inner end; a ring sleeved upon said barrel, and a cap threaded upon the outer end of said barrel adapted to clamp said parts together; a spindle; a hanger for said spindle having a tubular arm at its lower end adapted to receive the same; a spring arranged within said arm, adapted to hold said spindle normally outward; a supporting-rail for said hanger; and a clamp for adjustably securing said hanger to said rail, for the purpose specified.

6. The combination with a shaft of a cutter member consisting of a wheel having a split hub with a slot in its web partially encircling said hub; a rim of steel for said wheel; a set-screw arranged through the rim of said wheel adapted to engage said split hub whereby the same may be clamped upon said shaft; a disk-like cutter member; a spindle therefor; a hanger for said spindle having a tubular arm at its lower end adapted to receive the same; a spring arranged within said arm adapted to hold said spindle normally outward; a pin transversely arranged through the inner projecting end of said spindle, engaging said arm to retain said spindle therein; a groove in the end of said arm adapted to receive said pin; a supporting-rail for said hanger; a clamp consisting of a split sleeve adapted to receive said hanger, and a split sleeve adapted to receive said rail; hand-screws for said sleeves; and a nut threaded upon the upper end of said hanger for adjusting the same vertically, for the purpose specified.

7. The combination with a shaft of a cutter member consisting of a wheel having a split hub with a slot in its web partially encircling said hub; a rim of steel for said wheel; a set-screw arranged through the rim of said wheel adapted to engage said split hub, whereby the same may be clamped upon said shaft; a disk-like cutter member; a spindle therefor; a hanger for said spindle having a tubular arm at its lower end adapted to receive the same; a spring arranged within said arm adapted to hold said spindle normally outward; a pin transversely arranged through the inner projecting end of said spindle, en-

gaging said arm to retain said spindle therein; a groove in the end of said arm adapted to receive said pin; a supporting-rail for said hanger; a clamp consisting of a split sleeve adapted to receive said hanger, and a split sleeve adapted to receive said rail; and hand-screws for said sleeves, for the purpose specified.

8. The combination with a shaft of a cutter member consisting of a wheel having a split hub with a slot in its web partially encircling said hub; a rim of steel for said wheel; a set-screw arranged through the rim of said wheel adapted to engage said split hub whereby the same may be clamped upon said shaft; a disk-like cutter member; a spindle therefor; a hanger for said spindle having a tubular arm at its lower end adapted to receive the same; a spring arranged within said arm adapted to hold said spindle normally outward; a pin transversely arranged through the inner projecting end of said spindle, engaging said arm to retain said spindle therein; a groove in the end of said arm adapted to receive said pin; a supporting-rail for said hanger, and a clamp for adjustably securing said hanger to said supporting-rail, for the purpose specified.

9. The combination with a shaft of a cutter member consisting of a wheel having a split hub with a slot in its web partially encircling said hub; a rim of steel for said wheel; a set-screw arranged through the rim of said wheel adapted to engage said split hub whereby the same may be clamped upon said shaft; a disk-like cutter member; a spindle therefor; a hanger for said spindle having a tubular arm at its lower end adapted to receive the same; a spring arranged within said arm adapted to hold said spindle normally outward; a supporting-rail for said hanger; a clamp consisting of a split sleeve adapted to receive said hanger, and a split sleeve adapted to receive said rail; hand-screws for said sleeves; and a nut threaded upon the upper end of said hanger for adjusting the same vertically, for the purpose specified.

10. The combination with a shaft of a cutter member consisting of a wheel having a split hub with a slot in its web partially encircling said hub; a rim of steel for said wheel; a set-screw arranged through the rim of said wheel adapted to engage said split hub whereby the same may be clamped upon said shaft; a disk-like cutter member; a spindle therefor; a hanger for said spindle having a tubular arm at its lower end adapted to receive the same; a spring arranged within said arm adapted to hold said spindle normally outward; a supporting-rail for said hanger, and a clamp for adjustably securing said hanger to said supporting-rail, for the purpose specified.

11. The combination with a shaft of a cut-

ter member consisting of a wheel having a split hub with a slot in its web partially encircling said hub; a rim of steel for said wheel; a set-screw arranged through the rim of said wheel adapted to engage said split hub whereby the same may be clamped upon said shaft; a disk-like cutter member; a spindle therefor; a hanger for said spindle; a supporting-rail for said hanger; a clamp consisting of a split sleeve adapted to receive said hanger, and a split sleeve adapted to receive said rail; hand-screws for said sleeves; and a nut threaded upon the upper end of said hanger for adjusting the same vertically, for the purpose specified.

12. The combination with a supporting-rail of a cutter member consisting of a supporting-disk; a hub therefor made up of a barrel portion having a shoulder at its inner end; a ring sleeved upon said barrel and a cap threaded on the outer end of said barrel adapted to clamp said parts together; a spindle; a hanger for said spindle having a tubular arm at its lower end adapted to receive the same; a spring arranged within said arm adapted to hold said spindle normally outward; a pin transversely arranged through the inner projecting end of said spindle, adapted to engage the end of said arm to hold said spindle in position; a groove in the end of said arm adapted to receive said pin; a clamp consisting of a split sleeve adapted to receive said hanger, and a split sleeve adapted to receive said rail; hand-screws for said sleeves; and a nut threaded upon the upper end of said hanger for adjusting the same vertically, for the purpose specified.

13. The combination with a supporting-rail of a cutter member consisting of a supporting-disk; a hub therefor made up of a barrel portion having a shoulder at its inner end; a ring sleeved upon said barrel and a cap threaded on the outer end of said barrel adapted to clamp said parts together; a spindle; a hanger for said spindle having a tubular arm at its lower end adapted to receive the same; a spring arranged within said arm adapted to hold said spindle normally outward; a pin transversely arranged through the inner projecting end of said spindle, adapted to engage the end of said arm to hold said spindle in position; a groove in the end of said arm adapted to receive said pin; a clamp consisting of a split sleeve adapted to receive said hanger, and a split sleeve adapted to receive said rail; and hand-screws for said sleeves, for the purpose specified.

14. The combination with a supporting-rail of a cutter member consisting of a supporting-disk; a hub therefor made up of a barrel portion having a shoulder at its inner end; a ring sleeved upon said barrel and a cap threaded on the outer end of said barrel adapted to clamp said parts together; a spin-

dle; a hanger for said spindle having a tubular arm at its lower end adapted to receive the same; a spring arranged within said arm adapted to hold said spindle normally outward; a pin transversely arranged through the inner projecting end of said spindle, adapted to engage the end of said arm to hold said spindle in position; a groove in the end of said arm adapted to receive said pin; and a clamp for adjustably securing said hanger to said supporting-rail, for the purpose specified.

15. The combination with a supporting-rail of a cutter member; a spindle therefor; a hanger for said spindle having a tubular arm at its lower end adapted to receive the same; a spring arranged within said arm adapted to hold said spindle normally outward; a pin transversely arranged through the inner projecting end of said spindle, adapted to engage the end of said arm to hold said spindle in position; a groove in the end of said arm adapted to receive said pin; a clamp consisting of a split sleeve adapted to receive said hanger, and a split sleeve adapted to receive said rail; hand-screws for said sleeves; and a nut threaded upon the upper end of said hanger for adjusting the same vertically, for the purpose specified.

16. The combination with a supporting-rail of a cutter member; a spindle therefor; a hanger for said spindle having a tubular arm at its lower end adapted to receive the same; a spring arranged within said arm adapted to hold said spindle normally outward; a pin transversely arranged through the inner projecting end of said spindle, adapted to engage the end of said arm to hold said spindle in position; a groove in the end of said arm adapted to receive said pin; a clamp consisting of a split sleeve adapted to receive said hanger, and a split sleeve adapted to receive said rail; and hand-screws for said sleeves, for the purpose specified.

17. The combination with a supporting-rail of a cutter member; a spindle therefor; a hanger for said spindle having a tubular arm at its lower end adapted to receive the same; a spring arranged within said arm adapted to hold said spindle normally outward; a pin transversely arranged through the inner projecting end of said spindle adapted to engage the end of said arm to hold said spindle in position; a groove in the end of said arm adapted to receive said pin; and a clamp for adjustably securing said hanger to said supporting-rail, for the purpose specified.

18. The combination with a supporting-rail of a cutter member; a spindle therefor; a hanger for said spindle having a tubular arm at its lower end adapted to receive the same; a spring arranged within said arm adapted to hold said spindle normally outward; a pin transversely arranged through the inner projecting end of said spindle, adapted to en-

gage the end of said arm to hold said spindle in position; a clamp consisting of a split sleeve adapted to receive said hanger, and a split sleeve adapted to receive said rail; hand-screws for said sleeves; and a nut threaded upon the upper end of said hanger for adjusting the same vertically, for the purpose specified.

19. The combination with a supporting-rail of a cutter member; a spindle therefor; a hanger for said spindle having a tubular arm at its lower end adapted to receive the same; a spring arranged within said arm adapted to hold said spindle normally outward; a pin transversely arranged through the inner projecting end of said spindle adapted to engage the end of said arm to hold said spindle in position; and a clamp for adjustably securing said hanger to said supporting-rail, for the purpose specified.

20. The combination of a cutter member; a hub therefor made up of a barrel portion having a shoulder at its inner end; a ring sleeved upon said barrel and a cap threaded on the outer end of said barrel adapted to clamp said parts together; a spindle; a hanger for said spindle having a tubular arm at its lower end adapted to receive the same; a spring arranged within said arm adapted to hold said spindle normally outward; a pin transversely arranged through the inner projecting end of said spindle, adapted to engage the end of said arm to hold said spindle in position; and a groove in the end of said arm adapted to receive said pin, for the purpose specified.

21. The combination of a cutter member; a hub therefor made up of a barrel portion having a shoulder at its inner end; a ring sleeved upon said barrel and a cap threaded on the outer end of said barrel adapted to clamp said parts together; a spindle; a hanger for said spindle having a tubular arm at its lower end adapted to receive the same; a spring arranged within said arm adapted to hold said spindle normally outward; and a pin transversely arranged through the inner projecting end of said spindle, adapted to engage the end of said arm to hold said spindle in position, for the purpose specified.

22. The combination of a cutter member; a hub therefor made up of a barrel portion having a shoulder at its inner end; a ring sleeved upon said barrel and a cap threaded on the outer end of said barrel adapted to

clamp said parts together; a spindle; and a hanger for said spindle, for the purpose specified.

23. The combination with a shaft, of a rotary cutter member consisting of a wheel having a split hub with a slot in its web partially encircling said hub; a rim of steel for said wheel; and a set-screw arranged through the rim of said wheel adapted to engage said split hub whereby the same may be clamped upon said shaft, for the purpose specified.

24. The combination with a shaft, of a rotary cutter member consisting of a wheel having a split hub; a rim of steel for said wheel; and a set-screw arranged through the rim of said wheel adapted to engage said split hub whereby the same may be clamped upon said shaft; for the purpose specified.

25. The combination with a shaft, of a rotary cutter member consisting of a wheel having a split hub with a slot in its web partially encircling said hub; an integral rim of steel for said wheel; and a set-screw arranged to engage said split hub whereby the same may be clamped upon said shaft, for the purpose specified.

26. The combination with a shaft, of a wheel having a split hub; and a set-screw arranged through the rim of said wheel and arranged to engage said split hub whereby the same may be clamped upon said shaft, for the purpose specified.

27. The combination with a shaft, of a wheel having a split hub with a slot in its web partially encircling said hub, the web of said wheel opposite said slot being cored away to balance the same; and a set-screw arranged to engage said split hub whereby the same may be clamped upon said shaft, for the purpose specified.

28. The combination with a shaft, of a rotary cutter member consisting of a wheel having a split hub with a slot in its web partially encircling said hub; an integral rim for said wheel; and a means coacting with said rim to engage said split hub, whereby the same may be clamped upon said hub for the purpose specified.

In witness whereof I have hereunto set my hand and seal in presence of two witnesses.

JOHN F. KING. [L. S.]

Witnesses:

GEO. O. COMFORT,
OTIS A. EARL.