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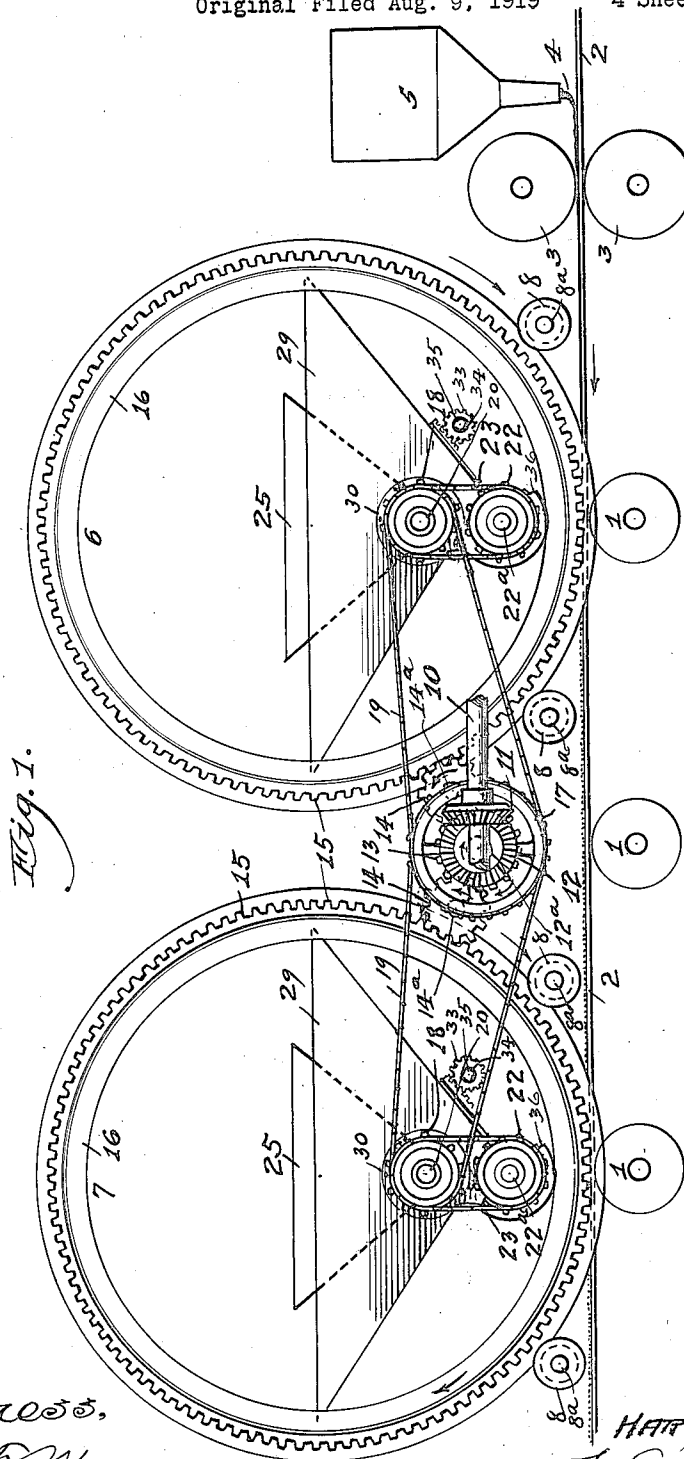
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H. A. CUMFER

ROOFING MACHINE

Original Filed Aug. 9, 1919

4 Sheets-Sheet 1



Witness,

J. E. Mann

Inventor,

HARRY A. CUMFER

By J. L. Belknap Att'y.

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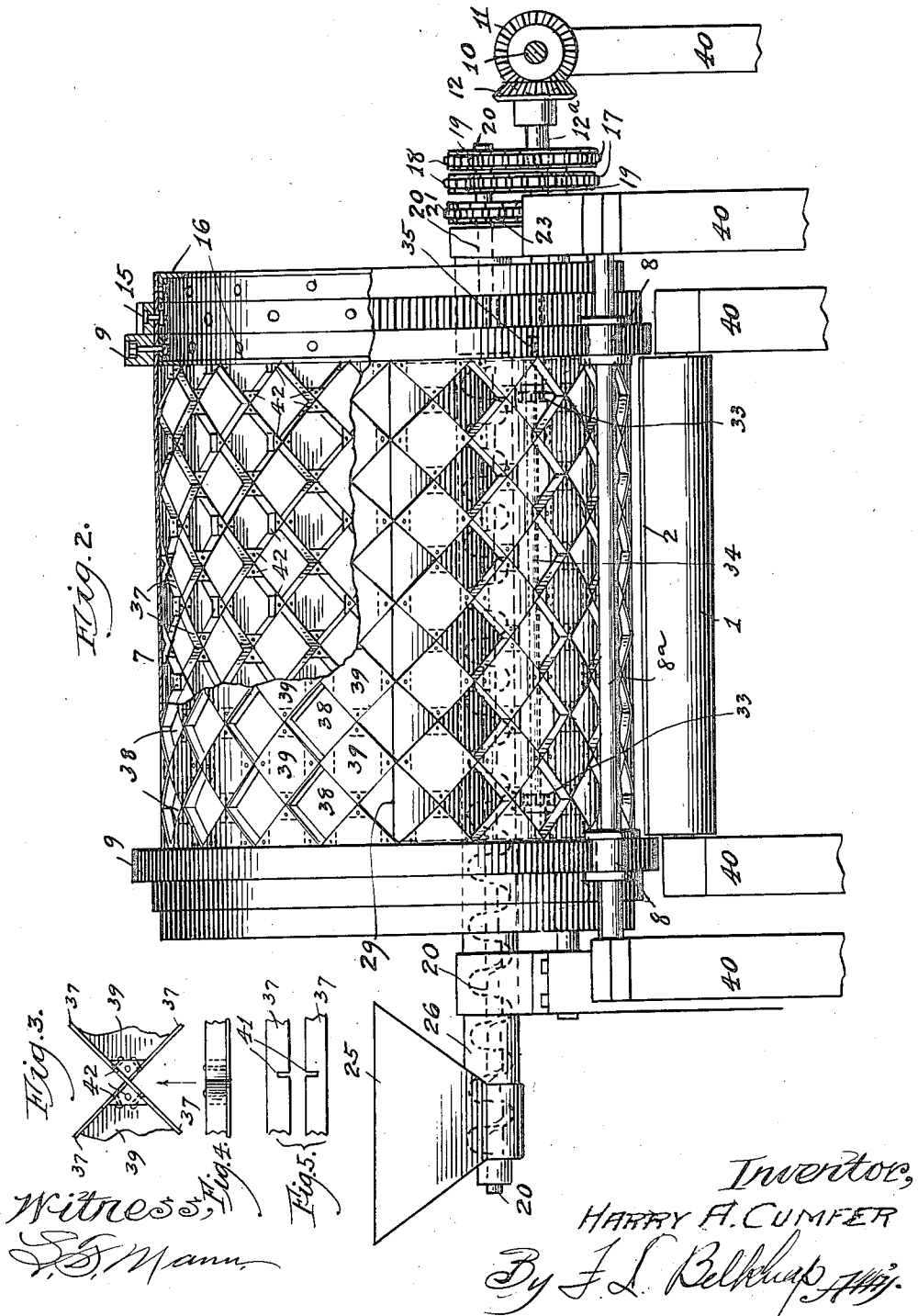
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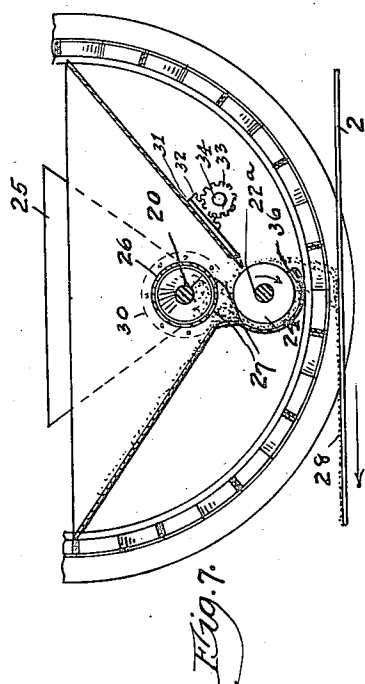
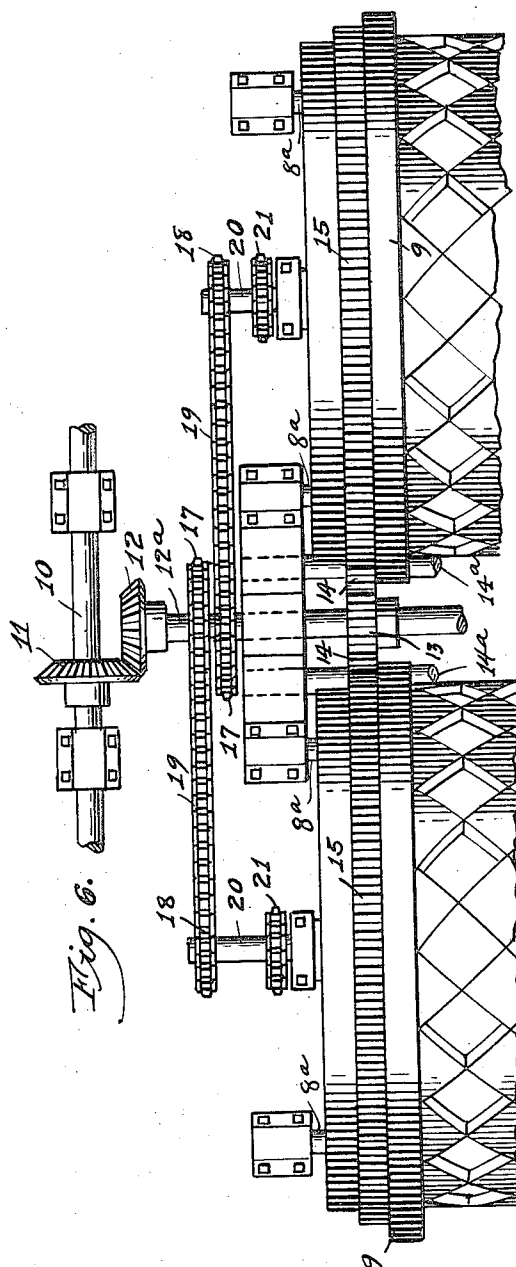
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Inventor,
HARRY A. CUMFER
By F. L. Belknap

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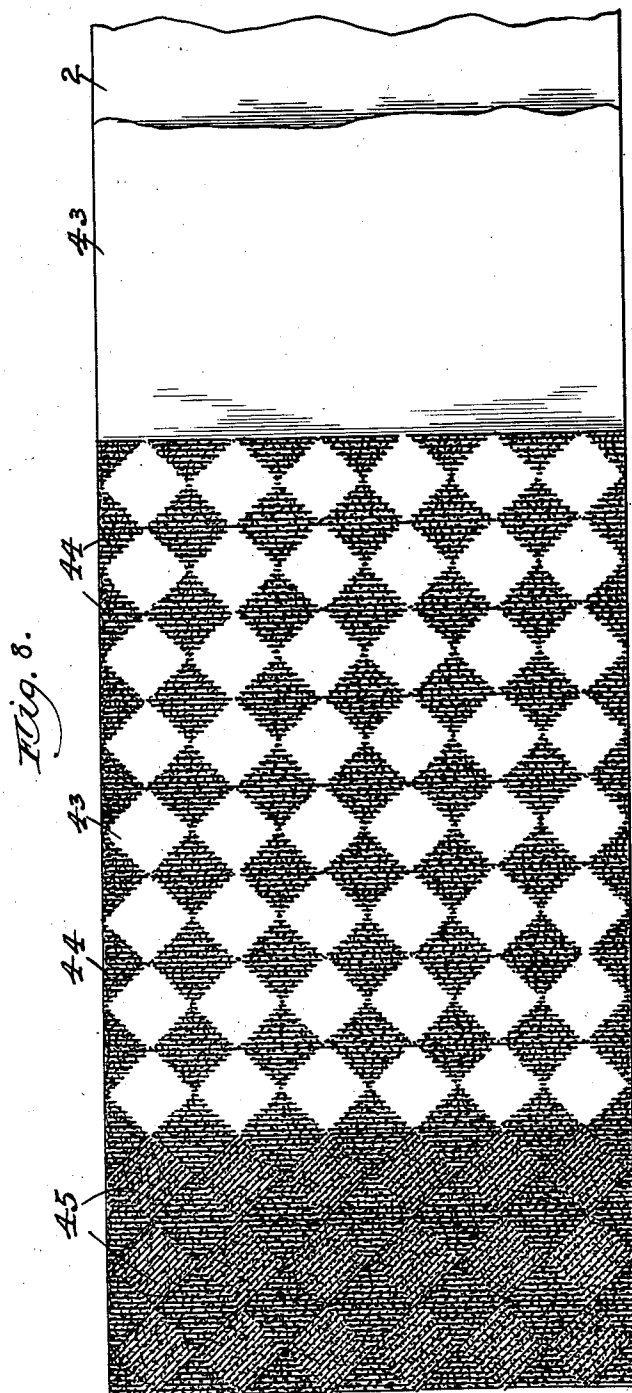
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ROOFING MACHINE

Original Filed Aug. 9, 1919

4 Sheets-Sheet 4



Witness,
S. S. Mann

Inventor,
HARRY A. CUMFER
By *J. L. Belknap* *Att'y.*

Patented Feb. 26, 1924.

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UNITED STATES PATENT OFFICE.

HARRY A. CUMFER, OF CHICAGO, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, OF ONE-HALF TO THE FLINTKOTE COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

ROOFING MACHINE

Application filed August 9, 1919, Serial No. 316,373. Renewed August 17, 1923.

To all whom it may concern:

Be it known that I, HARRY A. CUMFER, a citizen of the United States, residing in the city of Chicago, county of Cook and State of Illinois, have invented certain new and useful Improvements in Roofing Machines, of which the following is a specification.

My invention relates to a machine for making roofing, said roofing consisting of a strip of suitable backing material coated with asphaltum or other bitumen, upon which is more or less imbedded granular facing of slate, soapstone, mica, sand or the like in a predetermined design and relates also to an apparatus for making this class of roofing material.

The object of my invention is to provide an improved machine for making roofing of the character described in which granular substance may be laid down in patterns, using substances of various colors or other physical characteristics. Another object is to produce a more economical machine so constructed that excess material not used in making the pattern on the roofing material is returned to be used again.

To this end my invention consists in the novel construction, arrangement and combination of parts herein shown and described and more particularly pointed out in the claims.

In the accompanying drawings:

Fig. 1 is a side elevation of machine, parts omitted for clearness and parts broken away.

Fig. 2 is an end elevation, partly in cross section with parts broken away to show construction of drum.

Figs. 3, 4 and 5 are detailed views of method of joining squares.

Fig. 6 is a fragmentary plan view of driving mechanism.

Fig. 7 is a fragmentary end view of one of the drums showing method of distributing granular substance.

Fig. 8 is a plan view of roofing material in different stages of production.

In Fig. 1 are the bed rolls 1 or other suitable means arranged for supporting and feeding the roofing material 2, as it comes through the guide rolls 3 after receiving the adhesive substance 4 from the receptacle 5. The roofing material moves in the di-

rection of the arrow and is propelled by any suitable means (not shown).

Two hollow metallic drums 6 and 7 arranged directly above the roofing material 2 so their peripheries are at all times out of contact with the material as shown in Figs. 2 and 3. These drums are supported by means of flanged trunnion rolls 8 on shafts 8^a, said rolls engaging the flanges 9, fastened near the rims of the drums. The drums rotate in the same direction indicated by the arrows, and are driven by any suitable power, (not shown). This power is transmitted through the shaft 10, bevel gears 11, meshing with bevel gear 12 on shaft 12^a, a driving pinion 13, and two spur gears 14 on shafts 14^a, which spur gears mesh with like girth gears 15 fixed near the rim of each drum at its driving end as shown in Figs. 1 and 6.

The drums are identical in construction so the description of one will suffice. Like parts on each are numbered the same.

At both ends of each drum are angle rings 16, the proper height so as to confine the granular substance within the drums.

In Figs. 1 and 6, secured to the same shaft as the bevel gear 12 and driving pinion 13, are two sprocket wheels 17 which drive smaller sprockets 18, by means of chains 19. The sprockets 18 are fixed to and drive the conveyor shaft 20.

To this same shaft 20 is secured a second sprocket 21 which drives a similar sprocket 22, fixed on shaft 22^a directly below, by means of a chain 23. In this manner, the distributing roll 24 on shaft 22^a is operated, being fixed to the same shaft as the sprocket 22.

In Fig. 2 is shown a more comprehensive view of the method of feeding the granular substance to the drums. A conveyor shaft 20 is rotated within a tube 26 by means of the sprocket 18, chain driven from a sprocket 17, as shown in Figs. 1 and 6. The tube 26 is connected with the hopper 25 so with the rotating of the conveyor shaft 20, the granular substance travels from the hopper 25 and is distributed along the bottom of the tube 26, where it falls through a series of slots or ports 27 onto the distributing roll 24, which may be either smooth or corrugated, (Fig. 7), (running in the direc-

tion of the arrow) and chain driven from the conveyor shaft 20 by the two sprockets 21 and 22.

In Fig. 7, the travel of the granular substance after leaving the conveyor tube 26 is shown in detail. As the substance falls through the slots 27 in the tube 26, it is fed in a uniform layer 28 by the distributing roll 24 onto the adhesive coated roofing material 2. The drum as will be explained later, has a series of solid or blank spaces on its periphery conforming with the pattern selected and the granular substance that falls upon these areas remains in the drum and only that part of the granular filler that falls through the open areas of the drum reaches the roofing material. The revolving drum carries with it the excess substance which falls upon the blank spaces, until these blank spaces revolve past the axial center of the drum, where gravitation deposits the grit into the wide inner or scavenger hopper 29, contained within the drum. This hopper 29 is held in place by two flanges 30 which secure it to the conveyor tube 26. The substance caught by this hopper is returned to the distributing roll 24 for redistribution.

A gate 31 adjusted by means of two toothed racks 32, two pinions and an adjusting shaft 34 which may be turned by means of a wrench at its square end 35, furnishes a means by which the thickness of the granular coating may be regulated. On the opposite side of the roll 24, the hopper is shaped into a channel 36 in which the granular substance stands and furnishes a means by which the substance is fed evenly upon the distributing roll 24.

Any suitable standard 40 (Fig. 2) may be used to support the machine and its driving parts.

The drum as shown in Fig. 2 is built of a metal frame work 37 and may be made to conform with any desired pattern by the arrangement and character of the solid and open spaces upon its surface. For example the form shown in Fig. 2, a series of squares or rectangular openings 38 are of substantially uniform size with their diagonals in lines. The several openings 38 which constitute the pattern are accompanied by solid blank spaces 39 in alternate positions with the openings 38.

In Fig. 3, is shown the frame construction at a junction of the solid blanks 39 and the apertures 38. The metal frames are first dovetailed, each frame 37 being slotted at 41 (Fig. 5) then joined and made rigid by means of two small triangular blocks 42, which are riveted or welded into the angle of the frames 37 and to blanks 39, shown in Figs. 3 and 4.

In Fig 8 is shown the roofing material in successive stages of production. At 2 is

shown the original material, at 43 it has received the adhesive substance, at 44 it has passed under the first drum 6 and has received the initial layer of granular substance comprising the first stage of the pattern of any desired color, as red represented by the vertical lines. Finally at 45, the material has passed beneath the second drum 7 which contains grit of a different color, as green shown by the diagonal lines, the pattern is so arranged on this drum as to deposit the substance upon the intervening spaces left between the red pattern 44. The pattern is not necessarily restricted to two drums, a single pattern or two colors, for these elements may be varied as desired.

It is understood that the pattern drums will rotate in timed relation with the rate of feed of the roofing sheet so that the pattern will be laid down in a uniform and regular manner.

I claim as my invention.

1. In a machine of the character described, the combination with means for feeding a roofing sheet having an adhesive bituminous coated surface, of revolving drums provided with spaced openings of predetermined configuration, means for feeding grit through said openings whereby mineral grit can be applied to spaced areas of said adhesive coating, of a mechanism for returning excess material to be redistributed.

2. In a machine of the character described, the combination with means for feeding an adhesive bituminous coated roofing sheet, of a means for supplying a granular substance to revolving drums, provided with spaced openings of predetermined configuration, whereby colored mineral grit can be applied to spaced areas of said adhesive coating and means whereby excess grit may be returned for redistribution.

3. In a machine of the character described, the combination, with means for feeding a roofing sheet having an adhesive coated surface and impregnated with the adhesive coating, of a means of supplying granular substance to revolving drums provided with spaced openings of predetermined configuration and means whereby granular substances can be applied in a uniform layer to spaced areas of said adhesive coating and means whereby excess grit may be returned for redistribution.

4. In a machine of the character described, the combination with means for feeding a roofing sheet having an adhesive bituminous coated surface of revolving drums provided with spaced openings and solid portions so shaped as to form small receptacles for excess material, of means for returning this excess material to be used again.

5. In a machine of the character described, the combination with means for feeding a felted fibrous roofing sheet having

an adhesive bituminous coating, of a plurality of drums provided with spaced openings for applying colored mineral grit thereto, means for feeding grit through said openings whereby each succeeding drum supplies an element of the pattern to the uncovered surface of the roofing material left by the preceding drums and means for returning excess material for redistribution.

6. In a machine of the character described, the combination with means for feeding felted roofing having an adhesive bituminous coating, of a means for supplying mineral granular substances to revolving drums provided with spaced openings and solid portions, said solid portions so shaped as to form small receptacles for excess material, of a scavenger hopper for collecting such excess material, and a roll for distributing granular substance.

7. In a machine of the character described, the combination with a means for feeding a felted roofing sheet having an adhesive bituminous coated surface, of a means for supplying granular mineral substance to revolving drums, provided with spaced openings and solid portions so shaped as to form small receptacles for excess material, of a scavenger hopper and distributing roll for laying granular substance and means for regulating thickness of layer.

8. In a machine of the character described, the combination with means for feeding a roofing sheet having an adhesive coated surface, of a means for supplying

granular substance to revolving drums provided with spaced openings and solid portions in the form of a design, the solid portions shaped to form small receptacles for excess material, a scavenger hopper for collecting excess material, and a roll for distributing granular substance, means for rotating the drums uniformly relative to each other to impose a regular design.

9. In a machine of the character described, the combination with means for feeding a felted fibrous roofing sheet having an adhesive bituminous coating, of a conveyor tube and screw conveyor, of a series of ports for supplying grit to distributing roll, of a revolving drum provided with spaced openings and solid portions, shaped to form receptacle for excess substance of a scavenger hopper for collecting excess substance and roll for distributing same.

10. In a machine of the character described, the combination with means for feeding felted fibrous roofing sheet having an adhesive bituminous impregnating coating, of rotating drums, having a stenciled pattern cut in their peripheries, means for supplying the drums internally with mineral grits, of various colors, means for evenly distributing the grits through the apertures in the drums onto the sheets, the blanks or solid portions of the pattern adapted to collect the excess grit and return it for redistribution.

HARRY A. CUMFER.